

---

# National Prostate Cancer Audit

## Quality Improvement Plan – September 2024



---

**Citation for this document:**

National Prostate Cancer Audit (NPCA) Quality Improvement Plan. London:  
National Cancer Audit Collaborating Centre, Royal College of Surgeons of England, 2024.

---

This document was prepared by members of the NPCA project team:

Alison Tree – Clinical Lead Oncology  
Noel Clarke – Clinical Lead Surgery  
Jan van der Meulen – Senior Methodologist  
Thomas Cowling – Senior Methodologist  
Joanna Dodkins – Clinical Fellow  
Emily Mayne – Data Scientist  
Adrian Cook – Senior Statistician  
Cressida Miller – Senior Project Manager

With review and input from:

[NPCA Clinical Reference Group](#)

[NATCAN Executive Team](#)

---



**Royal College  
of Surgeons  
of England**

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. Registered Charity no: 212808.

---



**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>

---

© 2024 Healthcare Quality Improvement Partnership (HQIP)

Copyright All rights reserved. No part of this publication may be reproduced in any form (including photocopying or storing it in any medium by electronic means and whether or not transiently or incidentally to some other use of this publication) without the written permission of the copyright owner. Applications for the copyright owner's written permission to reproduce any part of this publication should be addressed to the publisher.

---

# Contents

Contents .....	3
Executive Summary .....	4
1. Introduction.....	5
1.1 Aim and objectives of the Quality Improvement Plan .....	5
1.2 The National Cancer Audit Collaborating Centre .....	5
2. Background on prostate cancer.....	5
2.1 Main issues in prostate cancer care and outcomes .....	5
2.2 Treatment .....	6
2.3 Guidelines on the management of prostate cancer .....	6
3. Approach to developing the Quality Improvement Plan .....	6
3.1 Approach to developing the audit scope .....	6
3.2 Approach to prioritising performance indicators.....	6
3.3 Data provision .....	7
3.4 Data limitations.....	7
3.5 Stakeholder involvement .....	7
3.6 Service Provision.....	7
4. Audit scope.....	8
4.1. Patient inclusion criteria .....	8
4.2. Care pathway .....	8
5. Quality improvement goals & performance indicators .....	9
6. Quality improvement framework.....	11
7. Improvement activities.....	12
7.1 National and regional.....	12
7.2 Local .....	13
7.3 Improvement tools .....	13
7.4 Improvement workshops .....	13
7.5 Designing a national quality improvement initiative .....	13
7.6 Patient and Public Involvement .....	13
7.7 Communication & dissemination activities.....	14
8. Evaluation .....	14
Appendix .....	15
1. National Cancer Audit Collaborating Centre (NATCAN) .....	15
2. Data provision .....	16
3. Quality improvement framework – supplementary information .....	17

# Executive Summary

The National Prostate Cancer Audit (NPCA) has been commissioned to evaluate prostate cancer care delivered in NHS hospitals across England and Wales. It aims to help NHS organisations to benchmark their prostate 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 prostate cancer.

The NPCA Quality Improvement Plan sets out the scope, care pathway, five quality improvement goals and seven performance indicators for the NPCA. The NPCA team carried out the process of selection in close collaboration with our Clinical Reference Group (CRG) whose members represent all our stakeholder organisations including patient groups and professionals involved in prostate cancer care.

Based on this work, the NPCA includes:

- Patients with a recorded diagnosis of ICD-10 code C61 (malignant neoplasm of prostate)
- Age at diagnosis  $\geq 18$  years old
- Diagnosis or treatment took place in an English NHS Trust or Welsh NHS Health Board

The audit covers the care pathway for patients considering both personal and tumour factors, supported by current guidelines, to receive personalised and evidence-based management.

The following five improvement goals have been identified for the NPCA:

1. To improve timely diagnosis and treatment of high-risk prostate cancer
2. To reduce potential over-treatment
3. To reduce potential under-treatment
4. To reduce short-term complications after radical prostate cancer surgery
5. To reduce medium-term complications after radical prostate cancer surgery and radiotherapy

The NPCA has identified seven performance indicators, mapped to these five improvement goals and clinical guidelines. It sets out improvement methods, improvement activities and approaches to evaluation of the Quality Improvement Plan.

# 1. Introduction

## 1.1 Aim and objectives of the Quality Improvement Plan

The NPCA's Quality Improvement Plan builds on the previous [Scoping Document](#) which set out the scope and care pathway of the NPCA and identified five key quality improvement goals. The Quality Improvement Plan aims to define seven performance indicators, and how they map to the NPCA quality improvement goals, national guidelines and standards. These performance indicators will be used by the NPCA to monitor progress towards its improvement goals and to stimulate improvements in prostate cancer care.

The Quality Improvement Plan describes the approach taken to develop the NPCA's 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 NPCA Quality Improvement Plan was developed in consultation with key stakeholders, including people with lived experience of prostate cancer and will be reviewed on an annual basis.

## 1.2 The National Cancer Audit Collaborating Centre

The NPCA is part of the [National Cancer Audit Collaborating Centre \(NATCAN\)](#) a new national centre of excellence to strengthen NHS cancer services by looking at treatments and patient outcomes across the country. It was set up on 1<sup>st</sup> 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. The centre is commissioned by the Healthcare Quality Improvement Partnership (HQIP) on behalf of NHS England and the Welsh Government.

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.

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

# 2. Background on prostate cancer

## 2.1 Main issues in prostate cancer care and outcomes

Prostate cancer is the most common solid cancer in men with approximately 50,000 new cases diagnosed each year in England and Wales and its [incidence is increasing](#).

There are concerns about over-diagnosis and over-treatment in men with low-risk disease, while men with locally advanced or high-risk disease may not be getting the radical treatments that they need. Furthermore, significant numbers of men present with metastatic disease and there is variation in access and use of diagnostic and treatment options in this group.

## 2.2 Treatment

Depending on overall clinical assessment, treatment options include:

- Active surveillance
- Surgery (prostatectomy)
- Radiation therapy (including brachytherapy)
- Systemic therapy (including chemotherapy and novel hormonal therapy)

## 2.3 Guidelines on the management of prostate cancer

The '[Prostate cancer: diagnosis and management](#)' NICE guideline [NG131] was published on 09 May 2019 and last updated on 15 December 2021. This guideline covers the diagnosis and management of prostate cancer in secondary care, including information on the best way to diagnose and identify different stages of the disease, and how to manage adverse effects of treatment.

## 3. Approach to developing the Quality Improvement Plan

This NPCA Quality Improvement Plan builds on the NPCA [Scoping Document](#) which sets out the patient inclusion criteria (Section 4) as well as five quality improvement goals for the NPCA (Section 5). This Quality Improvement Plan outlines seven performance indicators that have been mapped to clinical guidelines and the five 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, which is expected to evolve over subsequent years.

### 3.1 Approach to developing the audit scope

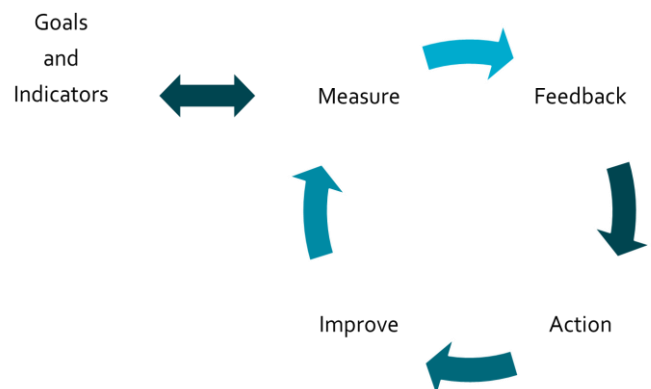
All performance indicators conform to our founding NATCAN principles. These principles are that all our activities are clinically relevant (close collaboration between clinical and academic experts), methodologically robust (using the best epidemiological and statistical approaches to carry out fair comparisons) and technically rigorous (using data science in order to drive quality improvement). Finally, the selected

performance indicators need to be measurable with the data that we have access to, as well as regularly assessed in our quarterly reporting, so were developed in close collaboration with our data partners in England (NDRS) and Wales (WCN).

### 3.2 Approach to prioritising performance indicators

Clinical Performance Feedback Intervention Theory (CP-FIT)<sup>1</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



Using the five quality improvement goals outlined in its Scoping Document, the NPCA developed a list of more than 20 candidate performance indicators for the performance of NHS providers. Prioritisation of seven 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 the NPCA'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>2</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.
- **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,

<sup>1</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>2</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.

with no unintended consequences. Some interventions may have demonstrated improvements to certain indicators in existing literature.

Some of these properties are difficult to know before 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, the NPCA's goals and performance indicators are likely to evolve over time too. Recommendations will also evolve and become more focused as the NPCA learns through the audit and feedback cycle.

### 3.3 Data provision

The NPCA uses information from routine national health care datasets. These capture details on the diagnosis, management and treatment of every patient newly diagnosed with prostate 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 the NPCA:

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 patients treated in England, Rapid Cancer Registration Data (RCRD) linked to other national healthcare datasets, will be used for quarterly 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 quarterly reporting. For patients treated in Wales, no equivalent of RCRD is currently available.

### 3.5 Stakeholder involvement

NPCA is a clinical-methodological partnership based at the Clinical Effectiveness Unit of the Royal College of Surgeons of England. Clinical leadership is provided by the British

Association of Urological Surgeons (BAUS) and British Uro-Oncology Group (BUG).

This is supported by annual meetings of the stakeholders in the Clinical Reference Group, including clinicians from across the patient pathway, patients, charity representatives and commissioners. The NPCA has strong and supportive relationships with Prostate Cancer UK, a patient representative organisation, and Tackle Prostate Cancer, a patient-led organisation, enabling us to draw upon their expertise and existing structures, particularly their patient information networks.

A standalone Patient and Public Involvement Forum provides advisory support, ensuring the patient perspective is central to the direction and delivery of the Audit. The NPCA has an active Patient and Public Involvement (PPI) Forum that meets twice yearly. Twelve men with varying characteristics and lived experiences act as a consultative group, advising on all aspects of the audit. During PPI meetings, we have discussed the NPCA's strategic direction and how it is delivered. Updates on outputs are presented and we ask advice on recommendations.

These trusted long-term relationships ensure the clinical relevance of NPCA work, engagement with clinicians and impact on quality improvement initiatives.

### 3.6 Service Provision

The NPCA have previously determined the arrangement of services (hub and spoke) for prostate cancer services based on NPCA organisational audits<sup>3</sup>. This underpins the level of granularity we report the Performance Indicators on. Consequently, we know how many Trusts and specialist multidisciplinary teams there are currently and how many trusts are surgical centres or radiotherapy centres.

---

<sup>3</sup> Aggarwal, A et al. "Organisation of Prostate Cancer Services in the English National Health Service." *Clinical oncology (Royal College of Radiologists (Great Britain))* vol. 28,8 (2016): 482-489. doi:10.1016/j.clon.2016.02.004

## 4. Audit scope

### 4.1. Patient inclusion criteria

The eligibility criteria for including patients in the NPCA is defined as follows:

- Patients with a recorded diagnosis of ICD-10 code C61 (malignant neoplasm of prostate)
- Age at diagnosis  $\geq 18$  years old
- Diagnosis or treatment took place in an English NHS Trust or Welsh NHS Health Board

### 4.2. Care pathway

An overarching principle of the improvement goals is that pathways of care consider both personal and tumour factors so that patients receive personalised, evidence-based management according to current guidelines. The audit will be able to appraise the appropriateness of and adherence to personalised care pathways.

Equally embedded in these improvement goals are ambitions to identify and address the health inequalities which can lead to excessive variation in treatment and outcomes, such as levels of deprivation and variation in socioeconomic status.



## 5. Quality improvement goals & performance indicators

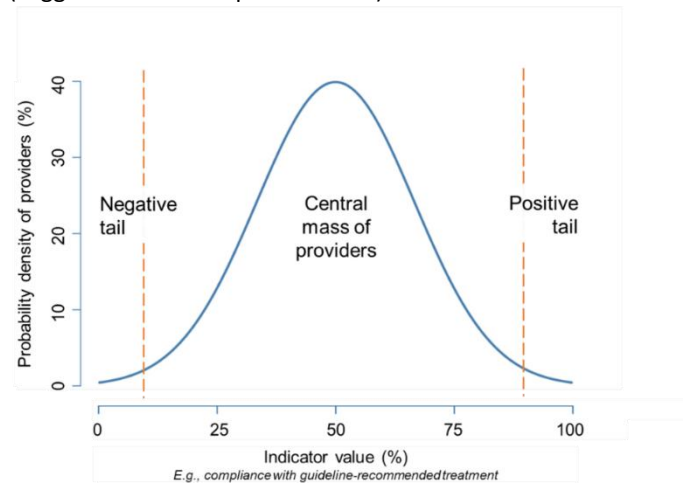
Quality improvement goal	Performance indicator	National guidance/standards
1. To improve timely diagnosis and treatment of high-risk prostate cancer	1. Percentage of men diagnosed with M1 disease	<a href="#">NICE Guideline [NG12]</a> , 2023: Suspected cancer: recognition and referral
2. To reduce potential over-treatment	2. Percentage of men with low-risk localised cancer undergoing radical prostate cancer treatment	<a href="#">NICE Quality Standard [QS91]</a> , 2015 QS2: men with low-risk prostate cancer for whom radical treatment is suitable are also offered the option of active surveillance. <a href="#">NICE Guideline [NG131]</a> , 2019 1.3.8 Offer a choice between active surveillance, radical prostatectomy or radical radiotherapy to people with low-risk localised prostate cancer for whom radical treatment is suitable.
3. To reduce potential under-treatment	3. Percentage of men with high-risk, locally advanced disease undergoing radical prostate cancer treatment  4. Percentage of men with metastatic disease who receive additional therapies (androgen receptor targeted agents [ARTA], Docetaxel)^	<a href="#">NICE Guideline [NG131]</a> , 2019 1.3.11: Do not offer active surveillance to people with high-risk localised prostate cancer.* <a href="#">NICE Guideline [NG131]</a> , 2019 1.3.12, 1.3.21: Offer radical prostatectomy or radical radiotherapy in combination with androgen deprivation therapy (ADT) to people with high-risk localised prostate cancer when it is likely the person's cancer can be controlled in the long term.* *recommendations should be considered in the context of each man's fitness to receive treatment <a href="#">NICE Guideline [NG131]</a> , 2019 1.5.6: Offer docetaxel chemotherapy to people with newly diagnosed metastatic prostate cancer who do not have significant comorbidities
4. To reduce short-term complications after radical prostate cancer surgery	5. Percentage of men who had an emergency readmission within 90 days of radical prostate cancer surgery	<a href="#">NICE Guideline [NG131]</a> , 2019 1.3.3: Warn people undergoing radical treatment for prostate cancer of the likely effects of the treatment on their urinary function. <a href="#">NICE Guideline [NG131]</a> , 2019 1.3.5: People with prostate cancer who are candidates for radical treatment should have the opportunity to discuss the range of treatment modalities and their serious side effects in relation to their treatment options with a specialist surgical oncologist and a specialist clinical oncologist.
5. To reduce medium-term complications after radical prostate cancer surgery and radiotherapy	6. Percentage of men experiencing at least one GU complication requiring a procedural/surgical intervention within 2 years of radical prostate cancer surgery  7. Percentage of men receiving a procedure of the large bowel and a diagnosis indicating radiation toxicity (GI	Royal College of Radiologists. <a href="#">Radiotherapy target volume definition and peer review. 2<sup>nd</sup> edition.</a> <a href="#">NICE Guideline [NG131]</a> , 2019 1.3.3: Warn people undergoing radical treatment for prostate cancer of the likely effects of the treatment on their urinary function.

Quality improvement goal	Performance indicator	National guidance/standards
	<p>complication) up to 2 years following radical prostate radiotherapy</p>	<p><a href="#">NICE Guideline [NG131]</a>, 2019 1.3.5: People with prostate cancer who are candidates for radical treatment should have the opportunity to discuss the range of treatment modalities and their serious side effects in relation to their treatment options with a specialist surgical oncologist and a specialist clinical oncologist.  <a href="#">NICE Guideline [NG131]</a>, 2014 1.3.44: Carry out full investigations, including flexible sigmoidoscopy, in people who have symptoms of radiation-induced enteropathy to exclude inflammatory bowel disease or malignancy of the large bowel and to ascertain the nature of the radiation injury.</p>

^ This is a new indicator subject to further methodological development prior to being reported in our State of the Nation reports.

## 6. Quality improvement framework

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, such as the NPCA, 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).

The NPCA will select which methods to implement to improve prostate 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 the NPCA will be aligned to the QIP. The NPCA will: (1) engage in key collaborations, (2) align with other initiatives in prostate cancer care, and (3) provide outputs to support quality improvement at the national, regional and local level.

The two principal strategies for reporting NPCA results are producing:

- A short ‘State of the Nation’ (SotN) report for NHS Trusts/Health Boards within England and Wales. This annual report publishes five key recommendations and highlights 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.
  - *Outlier process:* The NPCA has used a process linked to the SotN report of working with providers whose performance made them a negative outlier. This process includes closer investigation of the data, identifying possible explanations for low performance, and efforts to improve care. Provider responses are typically made public. This acts as a provider-level case study of the reason for the quality deficit and what quality improvement activities were initiated.
- A quarterly dashboard facilitates benchmarking and the monitoring of performance at regular intervals so improvements can be tracked over time.

## 7.1 National and regional

The NPCA undertakes various activities that directly support national stakeholders and regional NHS organisations to tackle system-wide aspects related to the delivery of high-quality prostate cancer services:

Stakeholder	NPCA activity
<i>NATIONAL</i>	
NHS England and Wales	Identify issues and make recommendations, on the organisation and delivery of prostate cancer services, which might involve national leadership. Recommendations published in audit’s State of the Nation reports.
National incentives	Provide the Care Quality Commission (CQC), Care Inspectorate Wales, and Getting It Right First Time (GIRFT) with information to support local visits to NHS organisations and options for aligning recommendations with specific incentives e.g. CQUIN.
Professional organisations	Identify issues and make recommendations regarding the delivery of prostate cancer care that fall within the remit of the professional organisations, including BUG and BAUS.
<i>REGIONAL</i>	
Cancer Networks / Alliances / Vanguard	Support the monitoring role of Welsh Cancer Networks and the English Cancer Alliances / Integrated Care Boards by publishing results for their region/area.

At a national level, the NPCA 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

The NPCA supports local NHS cancer services in their care of prostate cancer patients in the following ways:

NPCA 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.
Outlier process	Provider-level investigations of the reason for quality deficits and what quality improvement activities are initiated.
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.
Data case studies	Examples of different approaches used by NHS trusts in England to ensure their Cancer Outcomes and Services Dataset (COSD) submissions to NCRAS are as complete as possible.
Improvement Case Studies	Examples of different approaches used by NHS Trusts to improve care quality or recommendations identified from review of processes at positive or negative outliers, with a specific focus on the pathway of care.
Interventions	This will include possible interventions that have been identified in the literature linked to the performance indicators assessed by the audit or include interventions developed by Trusts/Alliances in the NHS.
Targets	Recommendations may include targets or thresholds for performance indicators e.g. 75 % expected to receive treatment.
Materials supplementary to the State of the Nation Report	Including tools for improving data completeness.

## 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

The NPCA’s first Quality Improvement Workshop 'Reducing treatment-related toxicity after radical prostate cancer treatment' was hosted in 2019. There have been four workshops to date and they are designed around QI goals and related key themes.

Annual NPCA QI workshops will continue around key themes identified by NPCA analyses and aimed at all members of the prostate cancer clinical care community.

## 7.5 Designing a national quality improvement initiative

Using rapid cancer registry data, the NPCA 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>4</sup>

The design and methodology underpinning this Quality Improvement initiative will be available in the next iteration of the Quality Improvement Plan further to consultation with NPCA stakeholders.

## 7.6 Patient and Public Involvement

The NPCA has an active Patient and Public Involvement (PPI) Forum that meets twice yearly. Twelve men with varying characteristics and lived experiences act as a consultative group, advising on all aspects of the audit. During PPI meetings, we have discussed the NPCA’s strategic direction and how it is delivered. Updates on outputs are presented and we ask advice on recommendations.

<sup>4</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.

This group help the NPCA project team by ensuring the voice of patients is central to the direction and delivery of the audit.

This includes:

- Be active participants in the production of audit outputs including
  - the development and review of patient information materials and summaries of the State of the nation reports
  - co-development and/or co-authorship of scientific papers that explore NPCA results
- Undertaking a key advisory role in developing the design and function of the website to ensure that patients and the public can easily find relevant results together with appropriate explanatory information
- Shaping the development of the NPCA's quality improvement goals, activities and outputs by ensuring this work is relevant from a patient perspective

## 7.7 Communication & dissemination activities

The NPCA will communicate regularly with stakeholders, including patients and the public in the following ways:

### Newsletters

- The NPCA Newsletter is distributed to key stakeholders on a quarterly basis, highlighting quality improvement methods and tools (where appropriate). These are also all published on the NPCA website.
- Project team members also contribute items for newsletters created by medical associations, patient associations.

### Website and Social Media

- The NPCA website will be reviewed and updated on a monthly basis (as appropriate).
- NPCA Twitter account will tweet (and retweet) about key resources, publications or topics of interest to our stakeholders, including tools to aid quality improvement.

### Conferences and Peer Reviewed Papers

- The NPCA will continue to present audit results at national conferences (such as those of BAUS and BUG) and at international conferences.
- Publish [peer-reviewed publications](#) of the results of methodological development, clinical epidemiological investigations of determinants of variation, mapping of the structure of prostate cancer services, and assessments of the impact of the NPCA's quality improvement activities and initiatives.

## 8. Evaluation

The NPCA will report year-on-year progress against improvement goals to the audit's Clinical Reference Group and in the SotN 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 NPCA or other national interventions on the performance of NHS providers, observational evaluation methods (when allocation of providers to certain groups cannot be controlled) or trial-based methods (when group allocation can be controlled) will be used. This includes approaches such as interrupted time series analysis, difference-in-differences analysis, and cluster-randomised controlled trials.

The NPCA will examine the opportunities for and strengths and limitations of alternative evaluation methods once NATCAN is more fully established.

# Appendix

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

NPCA is part of the National Cancer Audit Collaborating Centre ([NATCAN](#)), a national centre of excellence launched on 1<sup>st</sup> October 2022 to strengthen NHS cancer services by looking at treatments and patient outcomes in multiple cancer types across the country. 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 health-care performance.

NATCAN was set up on 1<sup>st</sup> 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 will meet at 6-monthly intervals and will receive regular strategic updates, programme plans, and progress reports for sign-off. Risks and issues will be 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 cancer audits. This group meets monthly. The Executive Team will provide 6-monthly updates to NATCAN's Board.

*Advisory groups*

The Executive Team will be 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, will advise 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 will provide guidance on the optimal approaches to change professional and



organisational behaviour. It will be chaired by NATCAN's Clinical Director and managed by the Director of Operations.

This set up will provide 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 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 will act 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 will include 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 will be to actively participate in the production of patient-focussed 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 (3 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>5</sup> despite a slightly lower case ascertainment and less complete staging information.

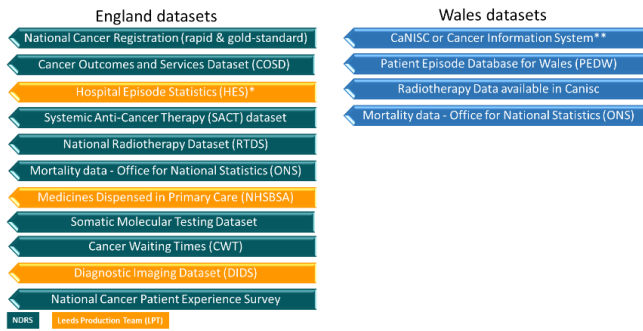
NATCAN will utilise these data across all cancers linked to administrative hospital data (Hospital Episode Statistics/Systemic Anti-Cancer Therapy/Radiotherapy Data Set/Office for National Statistics among other routinely collected datasets, see Figure 1) for describing diagnostic pathway patterns, treatments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

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

<sup>5</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



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 (not received to date). From 2022 data submissions will be from either Canisc or the new cancer dataset forms.

### 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 Trusts.

#### 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 Trusts to target interventions or evaluation at particular patient populations.