Scottish Cancer Strategic Board
National Cancer Quality Steering Group

Thyroid Cancer Clinical Quality Performance Indicators

Engagement Document

February 2024

Scottish Government
Riaghaltas na h-Alba

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1. National Cancer Quality Programme

Beating Cancer: Ambition and Action (2016) details a commitment to delivering the national cancer quality programme across NHSScotland, with a recognised need for national cancer QPIs to support a culture of continuous quality improvement. Addressing variation in the quality of cancer services is pivotal to delivering improvements in quality of care. This is best achieved if there is consensus and clear indicators for what good cancer care looks like.

Small sets of cancer specific outcome focussed, evidence based indicators are in place for 19 different tumour types. These QPIs ensure that activity is focused on those areas that are most important in terms of improving survival and individual care experience whilst reducing variation and supporting the most effective and efficient delivery of care for people with cancer. QPIs are kept under regular review and are responsive to changes in clinical practice and emerging evidence.

A programme to review and update the QPIs in line with evolving evidence is in place as well as a robust mechanism by which additional QPIs will be developed over the coming years.

1.1 Quality Assurance and Continuous Quality Improvement

The ultimate aim of the programme is to develop a framework and foster a culture of continuous quality improvement, whereby real time data is reviewed regularly at an individual Multi Disciplinary Team (MDT)/Unit level and findings actioned to deliver continual improvements in the quality of cancer care. This is underpinned and supported by a programme of regional and national comparative reporting and review.

NHS Boards are required to report against QPIs as part of a mandatory, publicly reported, programme at a national level. A rolling programme of reporting is in place, with approximately three national tumour specific summary reports published annually. These reports highlight the publication of performance data in the Cancer QPI Dashboard held within the Scottish Cancer Registry and Intelligence Service (SCRIS). The dashboard includes comparative reporting of performance against QPIs at MDT/Unit level across NHSScotland, trend analysis and survival. This approach helps to overcome existing issues relating to the reporting of small volumes in any one year.

In the intervening years, tumour specific QPIs are monitored on an annual basis through established Regional Cancer Network and local governance processes, with analysed data submitted to Public Health Scotland (PHS) for inclusion in the Cancer QPI Dashboard and subsequent national summary reports. This ensures that timely action is taken in response to any issues that may be identified through comparative reporting and systematic review.

2. Quality Performance Indicator (QPI) Development Process

The QPI development process was designed to ensure that indicators are developed in an open, transparent and timely way.

The Thyroid Cancer QPI Development Group was convened on 1st March 2023, chaired by Dr Rob Jones, Consultant Medical Oncologist, NHS Greater Glasgow and Clyde. Membership of this group includes multidisciplinary clinical representatives drawn from each region across the national network, the Scottish Cancer Network and National Services Scotland (NSS). Membership of the development group can be found in appendix 1.

2.1 Preparatory Work and Scoping

Through 'The Scottish Thyroid Cancer Project', national guidance was produced to supplement existing guidelines with the aim of reducing variation in practice across Scotland. Consensus Guidelines on 'Routine Practice for Differentiated Thyroid Cancer in Scotland' were developed to be read in tandem with the existing UK National Guidance on management of thyroid cancer, published by the British Thyroid Association (BTA) in 2014. More recently, in December 2022 the National Institute of Health and Care Excellence (NICE) published the guideline on 'Thyroid Cancer: Assessment and Management'. These informed the basis of the evidence on which QPIs for thyroid cancer were developed.

2.2 Indicator Development

The indicator development phase of the project allowed the development group to create evidence based, measurable indicators with a clear focus on what could actually make a real difference to quality of care.

Draft QPIs were then assessed by the Thyroid Cancer QPI Development Group against three criteria:

- Overall importance – does the indicator address an area of clinical importance that would significantly impact on the quality and outcome of care delivered?
- Evidence based – is the indicator based on high quality clinical evidence?
- Measurability – is the indicator measurable i.e. are there explicit requirements for data measurement and are the required data items accessible and available for collection?

A final short-list of QPIs was then agreed (see section 3), which were felt to address these criteria.

2.3 Format of the Quality Performance Indicators

QPIs are designed to be clear and measurable, based on sound clinical evidence whilst also taking into account other recognised standards and guidelines.

- Each QPI has a short title which will be utilised in reports as well as a fuller description which explains exactly what the indicator is measuring.

- This is followed by a brief overview of the evidence base and rationale which explains why the development of this indicator was important.

- The measurability specifications are then detailed; these highlight how the indicator will actually be measured in practice to allow for comparison across NHSScotland.

- Finally a target is indicated, this dictates the level which each unit should be aiming to achieve against each indicator.

In order to ensure that the chosen target levels are the most appropriate and drive continuous quality improvement as intended they are kept under review and revised as necessary, if further evidence or data becomes available.

Rather than utilising multiple exclusions, a tolerance level has been built into the QPIs. It is very difficult to accurately measure patient choice, co-morbidities and patient fitness therefore target levels have been set to account for these factors. Further detail is noted within QPIs where there are other factors which influenced the target level.

Where 'less than' (<) target levels have been set the rationale has been detailed within the relevant QPI. All other target levels should be interpreted as 'greater than' (>) levels.

3. Supporting Documentation

A national minimum core dataset and a measurability specification document are being developed in parallel with the indicators to support the monitoring and reporting of Thyroid Cancer QPIs. Implementation dates for these documents to be confirmed.

4. Quality Performance Indicators for Thyroid Cancer

QPI 1 – Multi-Disciplinary Team (MDT) Meeting

QPI Title:
Patients with thyroid cancer should be discussed by a multidisciplinary team to determine a treatment management plan.

Description:
Proportion of patients with thyroid cancer who are discussed at a MDT meeting.
Rationale and Evidence:

Evidence suggests that patients with cancer managed by a multi-disciplinary team (MDT) have a better outcome. There is also evidence that multidisciplinary management increases overall patient satisfaction with care provided, and has the potential to improve quality of life and survival.

Discussion of treatment plans by a MDT provides reassurance that patients are being managed appropriately. Many cases of thyroid cancer are only confirmed after surgery (e.g. after thyroidectomy for a benign thyroid condition or where cytology is indeterminate) In these instances, a diagnostic lobectomy or thyroidectomy may be confirmed as the definitive treatment. It is therefore appropriate for these cases to be discussed post-treatment.

Specification:
Numerator:
Number of patients with thyroid cancer discussed at a MDT meeting.

Denominator:
All patients with thyroid cancer.

Exclusions:
Patients who died before first treatment.

Target:
95%

QPI 2 – Molecular Testing in Differentiated Thyroid Cancer

QPI Title:
Patients with differentiated thyroid cancer should undergo molecular testing to allow for appropriate treatment planning.

Description
Proportion of patients with differentiated thyroid cancer measuring ≥10mm in size who undergo molecular testing as part of the diagnostic process.

Rationale and Evidence:
The use of molecular markers in differentiated thyroid cancer is valuable in determining risk stratification at diagnosis, may potentially influence treatment intensification, and can aid the selection of specific targeted therapies in the context of advanced radioiodine refractory disease.

For example, BRAF, TERT and combined BRAF/TERT mutations in papillary thyroid cancers are associated with increasing risk of recurrence and are incorporated in the ATA risk classification system.

Specifications:

- Numerator:
  - Number of patients with differentiated thyroid cancer measuring ≥10mm in size who undergo molecular testing.
- Denominator:
  - All patients with differentiated thyroid cancer measuring ≥10mm in size.
- Exclusions:
  - No exclusions.
- Target:
  - 95%

The tolerance level within this target is designed to account for situations where there is insufficient tissue for molecular testing.

QPI 3 – Volume of Cases per Surgeon

QPI Title:
Thyroid surgery should be performed by surgeons who perform the procedures routinely.

Description:
Number of thyroid operations performed by a surgeon over a 1 year period.

Rationale and Evidence:

Thyroid cancer should be operated on by high volume surgeons in order to reduce morbidity and increase favourable oncological results.

The literature demonstrates that there is a correlating relationship between volume and outcome in terms of complications for thyroid surgery.

A number of studies have shown the effect of high surgical volume of thyroidectomy on the reduced incidence of recurrent laryngeal nerve (RLN) injury and post-operative hypocalcaemia, as well as shorter length of hospital stay.

Specifications:

Number of thyroid operations performed by each surgeon in a given year.

Exclusions:

- No exclusions

Target:
Minimum 20 procedures per surgeon in a 1 year period.

This is a minimum target level and is designed to ensure that all surgeons performing thyroid surgery perform a minimum of 20 procedures per year.

Please Note: Varying evidence exists regarding the most appropriate target level for surgical case volume. In order to ensure that the target level takes account of level 1 evidence and will drive continuous quality improvement as intended this performance indicator must be kept under regular review.

It is recommended that where two consultants operate together on the same patient the case should be counted under the Lead Surgeon.

Please note:
SMR01 data will be utilised to support reporting and monitoring of this QPI rather than clinical audit. This will maximise the use of data which are already collected and remove the need for any duplication of data collection. Standard reports are in place with direct access for each Board to run these reports to ensure nationally consistent analysis and reporting.

QPI 4 – Time to Completion Surgery
QPI Title:
Patients with thyroid cancer who are required to undergo completion thyroidectomy should do so within 3 months of initial lobectomy.

Description:
Proportion of patients with thyroid cancer who undergo completion thyroidectomy within 3 months of initial lobectomy.

Rationale and Evidence:
Completion thyroidectomy allows surgeons to remove any residual thyroid tissue safely at a later date, which is often required following review of pathological findings.

Although there is no definitive evidence on the exact timing, clinical opinion states that an optimal time could be 3 months. This will facilitate timely adjuvant radioiodine remnant ablation treatment whilst also reducing complications which may occur with early surgery8.

Specifications:

- Numerator:
    - Number of patients with thyroid cancer who undergo completion thyroidectomy within 3 months of initial lobectomy.
- Denominator:
    - All patients with thyroid cancer who undergo lobectomy as their initial surgery followed by completion thyroidectomy.
- Exclusions:
    - Patients who die within 3 months of initial lobectomy.

Target:
70%

The tolerance within this target is designed to account for situations where patients cannot undergo surgery within the proposed timeframe due to co-morbidities or factors of patient choice.

Please note:
Additional information on the time from first biopsy to first definitive surgery will be reported across NHS Boards alongside this QPI. This information will be reviewed to ensure there is no impact on the quality of care due to delays in patient pathways.

QPI 5 – Radioiodine Remnant Ablation (RRA) following Thyroidectomy for Differentiated Thyroid Cancer

QPI Title:
Patients with T4 and/or N1b or metastatic differentiated thyroid cancer should receive high dose Radioiodine Remnant Ablation (RRA), where clinically appropriate.

Description:
Proportion of patients with T4 and/or N1b or metastatic differentiated thyroid cancer who have undergone thyroidectomy and receive 3.7GBq RRA.

Rationale and Evidence:
RRA is an important tool in minimising recurrence following surgical resection of locally advanced / high risk DTC and subsequent radioiodine therapy may control distant disease in patients with metastatic involvement.

It is recommended that patients with high risk features such as T4 and/or N1b or M1 disease receive radioactive iodine with ablation activity of 3.7GBq9.

The QPI Development Group agreed not to include aggressive subtypes (e.g. tall cell variant of papillary thyroid cancer) in the measurement of this QPI as there are other clinical factors that require consideration in order to determine the most appropriate treatment plan for this cohort of patients.

Specifications:

- Numerator:
    - Number of patients with T4 and/or N1b or metastatic differentiated thyroid cancer who have undergone thyroidectomy and receive 3.7GBq RRA.
- Denominator:
    - All patients with T4 and/or N1b or metastatic differentiated thyroid cancer who have undergone thyroidectomy.
- Exclusions:
    - Patients who decline RRA treatment.
    - Patients who die prior to RRA treatment.

Target:
90%

The tolerance within this target is to account for those patients with contraindications to RRA. In addition, it accounts for the fact that due to co-morbidities and fitness levels, not all patients will be suitable for RRA.

QPI 6 – Timing of Radioiodine Remnant Ablation (RRA) following Thyroidectomy for Differentiated Thyroid Cancer

QPI Title:
Patients with differentiated thyroid cancer who require high dose Radioiodine Remnant Ablation (RRA) should receive this therapy within 3 months of thyroidectomy .

Description:
Proportion of patients with differentiated thyroid cancer who undergo high dose (3.7GBq) RRA within 3 months of thyroidectomy.

Rationale and Evidence:
Radioiodine remnant ablation (RRA) is an important tool in minimising recurrence following thyroidectomy for differentiated thyroid cancer (DTC) and plays an integral role in risk stratification.

Although there are no definitive recommendations around optimal timing, there is evidence which suggests that delays in commencing radioactive iodine treatment for longer than 88 days is associated with risk of disease persistence and recurrence in N1 papillary thyroid cancer.

Furthermore, it has been shown that delayed initial radioactive iodine treatment (≥3 months post thyroidectomy) related to incomplete response in intermediate to high risk differentiated thyroid cancer.

Specifications:

- Numerator:
    - Number of patients with differentiated thyroid cancer who undergo high dose (3.7GBq) RRA within 3 months of thyroidectomy.
- Denominator:
    - All patients with differentiated thyroid cancer who undergo high dose (3.7GBq) RRA following thyroidectomy.
- Exclusions:
    - Patients who delay treatment due to pregnancy / breastfeeding.

Target:
70%

The tolerance within this target accounts for the fact that due to co-morbidities or surgical complications not all patients will be suitable for RRA within the optimal timeframe. It also accounts for factors of patient choice.

QPI 7 – Dynamic Risk Stratification (DRS) after Radioiodine Remnant Ablation (RRA) for Differentiated Thyroid cancer

QPI Title:
Patients with differentiated thyroid cancer who undergo Radioiodine Remnant Ablation (RRA) should have Dynamic Risk Stratification (DRS) performed following treatment.

Description
Proportion of patients with differentiated thyroid cancer who undergo RRA and have DRS performed within 12 months of completion of RRA .

Rationale and Evidence:
Dynamic Risk Stratification (DRS) using Thyroglobulin (Tg) and a neck ultrasound, nine to twelve months after Radioiodine Remnant Ablation (RRA)), is now widely used following publication of the British Thyroid Association's 2014 guidelines and the NICE guideline 2022 (Thyroid cancer: assessment and management (NG230).

DRS has been proposed and validated for patients who have received total thyroidectomy and RAI ablation. This permits the patients to be risk stratified into the following three groups – Excellent Response; Indeterminate Response and Incomplete Response.

Subsequent aspects of management including level of TSH suppression, frequency of follow-up and discharge from secondary care would be determined by this risk stratification.

Specifications:

- Numerator:
    - Number of patients with differentiated thyroid cancer who undergo RRA and have DRS performed within 12 months of completion of RRA.
- Denominator:
    - All patients with differentiated thyroid cancer who undergo RRA.
- Exclusions:
    - Patients who die within 12 months of treatment.

Target:
90%

The tolerance within this target is to account for the fact that some patients may not be fit for any further treatment due to disease progression therefore scoring may not be appropriate.

QPI 8 – Histological Diagnosis: Core Biopsy
QPI Title:
Patients with anaplastic thyroid cancer should have access to timely image guided core biopsy.

Description:

Proportion of patients with anaplastic thyroid cancer who undergo image guided core biopsy within one week of initial clinic appointment.

Rationale and Evidence:

Anaplastic thyroid cancer is a highly aggressive disease and prognosis relates to rapid diagnosis and surgery.

Diagnostic management must be initiated quickly in order to improve the outcome for patients. Evidence shows that it may be possible to double the overall survival time with the use of fast tracked investigations and targeted therapies. Diagnostic confirmation requires urgent biopsy followed by immuno-histochemical and molecular analysis.

Specifications:

- Numerator:
  - Number of patients with anaplastic thyroid cancer who undergo image guided core biopsy within one week of initial clinic appointment.
- Denominator:
  - All patients with anaplastic thyroid cancer.
- Exclusions:
  - Patients who decline biopsy investigation.

Target:
90%

The tolerance within this target is designed to account for situations where cancer is not suspected pre-operatively, or where patients are deemed unfit for radical treatment.

QPI 9 – Radiological Staging: CT Scan

QPI Title:
Patients with anaplastic thyroid cancer should have access to timely CT scan for staging purposes.

Description:

Proportion of patients with anaplastic thyroid cancer who undergo staging CT scan, where the report is available within one week of initial clinic appointment.

Rationale and Evidence:

Anaplastic thyroid cancer is a highly aggressive disease and prognosis relates to rapid diagnosis and surgery.

Accurate staging is important to ensure appropriate treatment can be delivered and futile interventions avoided.

Initial radiological staging should include CT neck, chest, abdomen and pelvis. It is critical that all initial staging procedures are expedited in order to avoid any delays to treatment.

Specifications:

- Numerator:
  - Number of patients with anaplastic thyroid cancer who undergo staging CT Scan, where the report is available within one week of initial clinic appointment.
- Denominator:
  - All patients with anaplastic thyroid cancer.
- Exclusions:
  - Patients who decline CT investigation.

Target:

90%

The tolerance within this target is designed to account for situations where cancer is not suspected pre-operatively, or where patients are deemed unfit for radical treatment.

QPI 10 – Turnaround Time of Molecular Testing in Anaplastic Thyroid Cancer

QPI Title:

Patients with anaplastic thyroid cancer should undergo molecular testing with timely results available to allow for appropriate treatment planning.

Description:

Proportion of patients with anaplastic thyroid cancer who undergo molecular testing with the genomics report available within 7 days of the sample arriving in the genomics laboratory.

Rationale and Evidence:

Anaplastic thyroid carcinoma is a rare and aggressive malignancy with a poor prognosis for patients. It accounts for 1 –2 % of all thyroid cancers, but also the majority of deaths from thyroid cancer. This type of cancer has a number of oncogenic alterations which is associated with being more aggressive, and therefore more challenging to treat.

Tyrosine kinase inhibitors have recently been found to be effective in the treatment of anaplastic thyroid carcinoma in which BRAF mutations are present.

Due to the rapidly progressive nature of anaplastic thyroid cancer, the risk of airway compromise and also the likelihood of distant metastases, treatment needs to be started as quickly as possible.

Specifications:

Numerator:

Number of patients with anaplastic thyroid cancer who undergo molecular testing with the genomics report available within 7 days of the sample arriving in the genomics laboratory.

Denominator:

All patients with anaplastic thyroid cancer.

Exclusions:

No exclusions.

Target:

90%

The tolerance level within this target is designed to account for situations where there is insufficient tissue for molecular testing, or for factors of patient choice.

5. Survival

Improving survival forms an integral part of the National Cancer Quality Programme. Survival analysis will be reported by Public Health Scotland (PHS). The specific issues which will be addressed, for example 1 year or 5 year survival rates, will be identified by an expert group ahead of any analysis being undertaken, as per the agreed national cancer quality governance and improvement framework.

To ensure consistent application of survival analysis, it has been agreed that a single analyst on behalf of all three regional cancer networks undertakes this work. Survival analysis will be scheduled as per the national survival analysis and reporting timetable, agreed with the National Cancer Quality Steering Group and Scottish Cancer Strategic Board. This reflects the requirement for record linkage and the more technical requirements of survival analyses which would make it difficult for individual Boards to undertake routinely and in a nationally consistent manner.

6. Areas for Future Consideration

The Thyroid Cancer QPI Development Group were not able to identify sufficient evidence, or determine appropriate measurability specifications, to address all areas felt to be of key importance in the treatment of thyroid cancer and therefore in improving the quality of care for patients affected by this type of cancer.

The following area for future consideration has been raised across the lifetime of the Thyroid Cancer QPI Development Group:

- Molecular Testing in Medullary Thyroid Cancer

7. Governance and Scrutiny

A national and regional governance framework to assure the quality of cancer services in NHSScotland has been developed; key roles and responsibilities within this are set out below. Appendices 2 and 3 provide an overview of these governance arrangements diagrammatically. The importance of ensuring robust local governance processes are in place are recognised and it is essential that NHS Boards ensure that cancer clinical audit is fully embedded within established processes.

7.1 National

- Scottish Cancer Strategic Board
    - Accountable for overall national cancer quality programme and overseeing the quality of cancer care across NHSScotland.
    - Advising Scottish Government Health and Social Care Directorate (SGHSCD) if escalation required.

- Healthcare Improvement Scotland
    - Proportionate scrutiny of performance.
    - Support performance improvement.
    - Quality assurance: ensure robust action plans are in place and being progressed via regions/Boards to address any issues identified.

- Public Health Scotland (PHS)
    - Publish national comparative report on tumour specific QPIs and survival for approximately three tumour types per annum as part of the rolling programme of reporting

7.2 Regional – Regional Cancer Networks

- Annual regional comparative analysis and reporting against tumour specific QPIs.
- Support national comparative reporting of specified generic QPIs.
- Identify and share good practice.
- In conjunction with constituent NHS Boards identify regional and local actions required to develop an action plan to address regional issues identified.
- Review and monitoring of progress against agreed actions.
- Provide assurance to NHS Board Chief Executive Officers and Scottish Cancer Strategic Board that any issues identified have been adequately and timeously progressed.

7.3 Local – NHS Boards

- Collect and submit data for regional comparative analysis* and reporting in line with agreed measurability and reporting schedule (generic and tumour specific QPIs).
- Utilise local governance structures to review performance, develop local action plans and monitor delivery.
- Demonstrate continual improvements in quality of care through on-going review, analysis and feedback of clinical audit data at an individual multidisciplinary team (MDT) or unit level.

* The Scottish Cancer Network is responsible for data collection and analysis for the Thyroid Cancer QPIs rather than NHS Boards.

8. How to Participate in the Engagement Process

In order to ensure wide inclusiveness of clinical and management colleagues from across NHSScotland, patients affected by thyroid cancer and the wider public, draft documentation will be widely circulated for comment and feedback. This will include professional groups, health service staff, voluntary organisations and other relevant individuals.

8.1 Submitting your Comments

You can submit your comments on the Thyroid Cancer QPIs, via the Scottish Government Consultation Hub (website link below):

Website: Scottish Government - Citizen Space (consult.gov.scot)

If you require any further information regarding the engagement process please use the email address below.

Email: ThyroidQPIPublicEngagement@gov.scot

8.2 Engagement Feedback

At the end of the engagement period, all comments and responses will be collated for review by the Thyroid Cancer QPI Development Group. Those who have participated in the engagement process will receive an overview of the changes made and a copy of the final Thyroid Cancer QPI document.

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10. Appendices

Appendix 1: Thyroid Cancer QPI Development Group Membership (2023)

Rob Jones (Chair), Consultant Medical Oncologist, WoSCAN

Prakash Abraham, Consultant & Lead Endocrinologist, NCA

Richard Adamson, ENT Surgeon, SCAN

Lisa Black, Clinical Nurse Specialist, SCAN

Jen Doherty, Project Co-ordinator, National Cancer Quality Programme

Christine Dodds, Senior Cancer Audit Facilitator, SCAN

Kathryn Graham, Consultant Clinical Oncologist, WoSCAN

Linda Kempton (to July 23) / Caron Smith (from Aug 23), Lead Clinical Nurse Specialist (Head, Neck & Thyroid), SCAN

Claire Lawrie, Senior Programme Manager, National Services Scotland

Morna MacNeill, Consultant Pathologist, SCAN

Carol Marshall, Audit Manager, WoSCAN

Laura Matia Herrero, Project Support, Scottish Cancer Network

Claire McArthur, Consultant Head and Neck Radiologist, WoSCAN

Nicola McCloskey-Sellar, Regional Manager (Cancer), SCAN

Bryan McKellar, Regional Manager (Cancer), NCA

Julie McMahon, Information Analyst, WoSCAN

Anna Morton, Programme Manager, Scottish Cancer Network

Hugh O'Pray, Data Analyst, National Services Scotland

Pamela Reid, Clinical Nurse Specialist, SCAN

Mark Strachan, Consultant Endocrinologist / Scottish Thyroid Cancer Network Lead, SCAN

Lorraine Stirling, Project Officer , National Cancer Quality Programme

Lucy Wall, Consultant Clinical Oncologist, SCAN

Irene Wotherspoon, Clinical Nurse Specialist, WoSCAN

Appendix 2: 3 Yearly National Governance Process and Improvement Framework for Cancer Care

This process is underpinned by the annual regional reporting and governance framework (see appendix 3).

1. National QPI Development Stage
    - QPIs developed by QPI development groups, which include representation from Regional Cancer Networks, Healthcare Improvement Scotland, PHS, patient representatives and the Cancer Coalition.
2. Data Analysis Stage:
    - NHS Boards and Regional Cancer Advisory Groups (RCAGs)* collect data and analyse on yearly basis using nationally agreed measurability criteria and produce action plans to address areas of variance, see appendix 4.
    - Submit yearly reports to PHS for collation and publication every 3 years.
    - National comparative report approved by NHS Boards and RCAGs.
    - PHS produce comparative, publicly available, national report consisting of trend analysis of 3 years data and survival analysis.

3. Expert Review Group Stage (for 3 tumour types per year):
    - Expert group, hosted by Healthcare Improvement Scotland, review comparative national results.
    - Write to RCAGs highlighting areas of good practice and variances.
    - Where required NHS Boards requested to submit improvement plans for any outstanding unresolved issues with timescales for improvement to expert group.
    - Improvement plans ratified by expert group and Scottish Cancer Strategic Board.

4. Improvement Support Stage:
    - Where required Healthcare Improvement Scotland provide expertise on improvement methodologies and support.

5. Monitoring Stage:
    - RCAGs work with Boards to progress outstanding actions, monitor improvement plans and submit progress report to Healthcare Improvement Scotland.
    - Healthcare Improvement Scotland report to Scottish Cancer Strategic Board as to whether progress is acceptable.

6. Escalation Stage:
    - If progress not acceptable, Healthcare Improvement Scotland will visit the service concerned and work with the RCAG and Board to address issues.
    - Report submitted to Scottish Cancer Strategic Board and escalation with a proposal to take forward to Scottish Government Health Department.

*The Regional Cancer Planning Group (South and East of Scotland) and the North Cancer Clinical Leadership Group (North Cancer Alliance) are equivalent to the Regional Cancer Advisory Group (RCAG) in the West of Scotland.

Appendix 3: Regional Annual Governance Process and Improvement Framework for Cancer Care

1. Regional QPI Implementation Stage:
   - National cancer QPIs and associated national minimum core dataset and measurability specifications, developed by QPI development groups.
   - Regional implementation of nationally agreed dataset to enable reporting of QPIs.

2. Data Analysis Stage:
   - NHS Boards collect data and data is analysed on a yearly basis using nationally agreed measurability criteria at local/ regional level.
   - Data/results validated by Boards and annual regional comparative report produced by Regional Networks.
   - Areas of best practice and variance across the region highlighted.
   - Yearly regional reports submitted to PHS for collation and presentation in national report every 3 years.

3. Regional Performance Review Stage:
   - RCAGs* review regional comparative report.
   - Regional or local NHS Board action plans to address areas of variance developed.
   - Appropriate leads identified to progress each action.
   - Action plans ratified by RCAGs.

4. Monitoring Stage:
   - Where required, NHS Boards monitor progress with action plans and submit progress reports to RCAGs.
   - RCAGs review and monitor regional improvement.

5. Improvement Support Stage:
   - Where required Healthcare Improvement Scotland maybe requested to provide expertise to NHS Boards/RCAGs on improvement methodologies and support.

6. Escalation Stage:
   - If progress not acceptable, RCAGs will escalate any issues to relevant Board Chief Executives. If progress remains unacceptable RCAGs will escalate any relevant issues to Healthcare Improvement Scotland.

*The Regional Cancer Planning Group (South and East of Scotland) and the North Cancer Clinical Leadership Group (North Cancer Alliance) are equivalent to the Regional Cancer Advisory Group (RCAG) in the West of Scotland.

Appendix 4: Glossary of Terms

Adjuvant Treatment	Treatment such as chemotherapy, radiotherapy or radioactive iodine treatment that is given after a surgical procedure to reduce the risk of the cancer coming back.
Anaplastic Thyroid cancer	A rare form of thyroid cancer which grows quickly and often spreads to other parts of the body. It is classed as undifferentiated thyroid cancer.
BRAF	Specific genetic marker that when mutated allows tumour cells to be killed off with a specific class of anticancer drugs.
BRAF Testing	A test to establish whether there is a mutation present in the BRAF gene.
Cancer	The name given to a group of diseases that can occur in any organ of the body, and in blood, and which involve abnormal or uncontrolled growth of cells.
Co-morbidities	The presence of one or more additional disorders or diseases.
Completion Thyroidectomy	A procedure to remove remaining thyroid tissue after the initial operation, due to the outcome of pathological results or lymph node involvement.
Computed Tomography (CT)	An x-ray imaging technique, which allows detailed investigation of the internal organ of the body.
Definitive Treatment	Treatment designed to potentially cure cancer using one or a combination of interventions.
Diagnosis/Diagnosed	The process of identifying a disease, such as cancer, from its signs and symptoms.
Differentiated Thyroid Cancer	Cancer cells that have some features of normal thyroid gland cells divided into 2 groups – papillary and follicular thyroid cancer.
Dynamic Risk Stratification	A system that assesses the risk of recurrence based on the response to primary treatment.
First-line/Primary treatment	Initial treatment used to reduce or treat a cancer.
Histological/ Histopathological/Histology	The study of the structure, composition and function of tissues under the microscope, and their abnormalities.
Hypocalcaemia	A medical condition which refers to low calcium levels in the blood serum. This can occur following thyroidectomy.
Image Guided Core Biopsy	Removal of a sample of tissue for diagnosis using an ultrasound scanner to accurately guide a needle to the appropriate site.
Lobectomy (thyroid)	A surgical procedure which removes half of the thyroid gland i.e. one of the two thyroid lobes (left or right) are removed, leaving the other intact.
Malignant	Cancerous. Malignant cells can invade and destroy nearby tissue and spread to other parts of the body.
Metastatic Disease	Spread of cancer away from the primary site to somewhere else via the bloodstream or the lymphatic system. Metastatic disease can be local

	(close to the area where the cancer is) or distant (in another area of the body).
Molecular Testing	A method of testing tumours for genetic characteristics and biomarkers. Based on this information, targeted therapies can then be recommended for treatment.
Morbidity	How much ill health a particular condition causes.
Mortality	Either (1) the condition of being subject to death; or (2) the death rate, which reflects the number of deaths per unit of population in and specific region, age group disease or other classification, usually expressed as deaths per 1,000, 10,000 or 100,000.
Multi-disciplinary team meeting (MDT)	A meeting which is held on a regular basis, which is made up of participants from various disciplines appropriate to the disease area, where diagnosis, management, and appropriate treatment of patients is discussed and decided.
Papillary Thyroid Cancer	A type of differentiated thyroid cancer. Papillary is the most common type of thyroid cancer.
Pathological	The study of disease processes with the aim of understanding their nature and causes. This is achieved by observing samples of fluid and tissues obtained from the living patient by various methods, or at post mortem.
Radical Treatment	Treatment that aims to get to completely get rid of a cancer.
Radioiodine Remnant Ablation (RRA)	Safe and effective treatment for destroying residual thyroid tissue using radioactive iodine.
Recurrence	When new cancer cells are detected at the site of the original tumour, following treatment.
Recurrent Laryngeal Nerve (RLN) Injury	A post-operative complication that can occur following thyroid surgery and may cause hoarseness or loss of voice.
Staging	Process of describing to what degree cancer has spread from its original site to another part of the body. Staging involves clinical, surgical and pathology assessments and can be described using the TNM system (Tumour, Node, Metastasis).
Survival	The percentage of people in a study or treatment group who are alive for a certain period of time after they were diagnosed with or treated for a disease, such as cancer.
Systemic Anti-Cancer Therapy (SACT)	Treatment of cancer using drugs which prevent the replication or growth of cancer cells. This encompasses biological therapies and cytotoxic chemotherapy.
Thyroglobulin	A protein that is produced and stored in the thyroid gland. Increased levels may indicate the presence of cancer.
Thyroid	A gland in the neck that makes and stores

	hormones that help regulate the heart rate, blood pressure, body temperature and the rate at which food is converted into energy.
Thyroid Cancer	A fairly rare cancer that is found in the thyroid gland (see Thyroid).
Thyroidectomy	Complete or partial removal of the thyroid gland to treat disorders like cancer, non-cancerous tumour or overactive gland.
Thyroid Stimulating Hormone (TSH)	TSH promotes the growth of the thyroid gland in the neck and stimulates it to produce more thyroid hormones.
Tyrosine Kinase Inhibitors	A type of targeted therapy which blocks tyrosine kinase enzymes (proteins which speed up chemical reactions in the body) which in turn stops the cancer cells growing and dividing. Also known as TKI's.

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