Scottish Cancer Network

SANON
Scottish Adult Neuro Oncology Network

NHS SCOTLAND

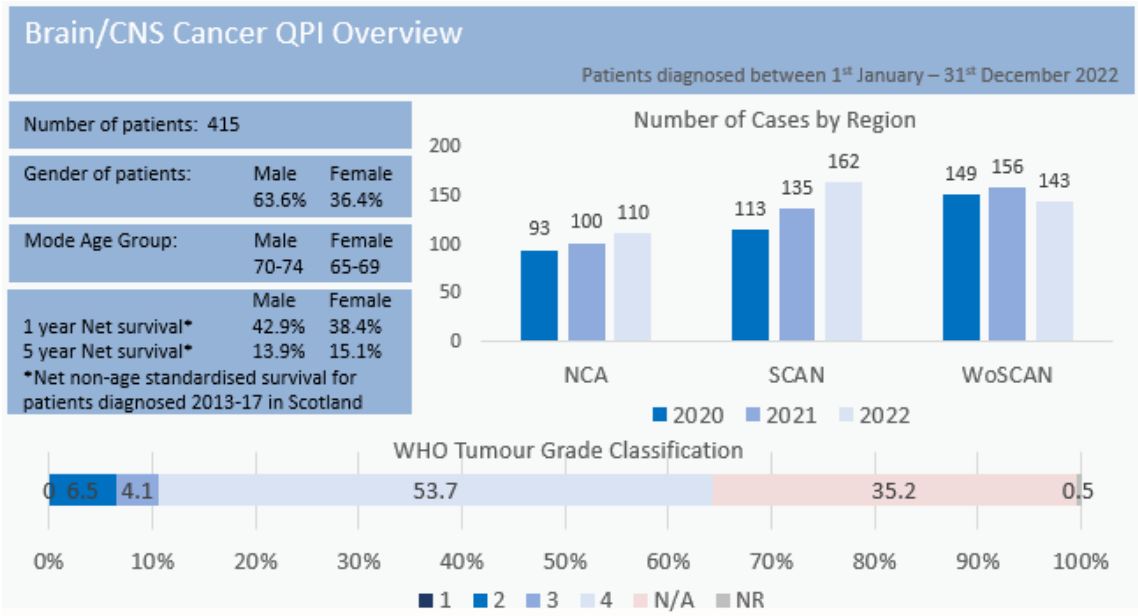
# Brain and Central Nervous System Cancers Clinical Audit Report

## Quality Performance Indicators

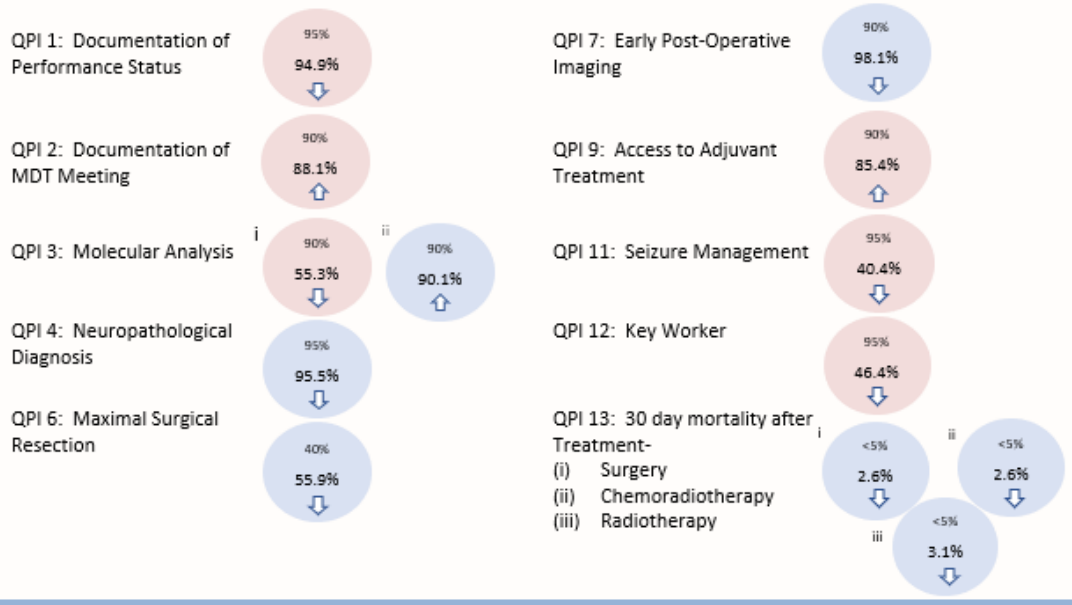
## 01 January – 31 December 2022

# Contents

# Brain/CNS Cancer QPI Overview 2022




## Performance (%)




## Conclusion

Performance across Regional centres is variable for a number of QPIs, however it is encouraging that targets were met by all centres for the following indicators:

- Maximal Surgical resection in 55.9% of cases
- Early post-operative imaging in 98.1% of cases
- 30 day mortality after treatment in 2.6% of cases

Targets were met nationally for Molecular Analysis (90.1%), Neuropathological Diagnosis (95.5%), 30 day mortality after Chemo-radiotherapy (2.6%) and 30 day mortality after radiotherapy (3.1%).

Improvements in performance against QPI 2 Documentation of MDT meeting, QPI 9 Access to adjuvant treatment and QPI 12 Key Worker were noted.

# Executive Summary

## Introduction

The purpose of this report is to present an assessment of the performance of Adult Neuro-Oncology services using clinical audit data relating to patients diagnosed with brain and central nervous system (CNS) cancers across Scotland from 01 January 2022 to 31 December 2022, with twelve months of data measured against the Brain and CNS Cancer quality performance indicators[1] (QPIs) for the ninth consecutive year.

## Methodology

Further detail on the audit and analysis methodology and data quality is available in the meta data within Appendix 1.

## Results

The number of patients newly diagnosed with Brain or CNS cancer in both the South-East and North of Scotland has increased in the last year (27% and 10%, respectively), with 13% fewer primary diagnoses in the West of Scotland in 2022 compared to 2021. This is due to a reporting change. Formerly NHS Forth Valley (FV) patients were included in WoSCAN data and are now allocated to the SCAN dataset.

A summary of the Brain/CNS Cancer QPIs 2022 clinical audit data is presented below, with a more detailed analysis of the results set out in the main report. Results for each QPI are shown in detail in the main report and illustrate regional or treatment centre performance against each target and overall national results for each performance indicator. Results are presented in graphic and tabular format, with missing data highlighted and any possible effect on the measured outcomes identified.

Where the number of cases meeting the denominator criteria for any indicator is between one and four, the percentage calculation has not been shown on any associated charts or tables. This is to avoid any unwarranted variation associated with small numbers and to minimise the risk of disclosure. Any charts or tables impacted by this restricted data are denoted with a dash (-). An asterisk (*) is applied to indicate a denominator of zero and to distinguish between this and a 0% performance.

Any commentary provided by NHS Board, Region or MDT/neuro-oncology centre relating to the impacted indicators will be included as a detailed record of the circumstances affecting the outcome and to assist the improvement process. Specific NHS Board, Region or MDT/neuro-oncology centre actions have been identified to address issues highlighted through data analysis.

Scottish Cancer Network

NHS SCOTLAND

# Summary of QPI Results

| Colour Key |
|---|
| Above QPI target |
| Below QPI target |

| Quality Performance Indicator (QPI) | Performance by NHS Region | | | | | |
|---|---|---|---|---|---|---|
| | QPI target | Year | NCA | SCAN | WoSCAN | Scotland |
| **QPI 1: Documentation of Performance Status** – Proportion of newly diagnosed patients with brain/CNS cancer who have a documented WHO performance status at the time of multi-disciplinary team (MDT) discussion | 95% | 2022 | 92.7% (101/109) | 92.6% (150/162) | 99.3% (142/143) | 94.9% |
| | | 2021 | 94.0% | 94.6% | 96.2% | 95.1% |
| | | 2020 | 94.4% | 88.2% | 92.6% | 91.7% |
| **QPI 2: Documentation of MDT meeting** - Proportion of patients with Brain/CNS cancer who are discussed at MDT meeting before surgery | 90% | 2022 | 92.2% (59/64) | 94.1% (96/102) | 79.8% (83/104) | 88.1% |
| | | 2021 | 91.5% | 90.9% | 66.7% | 79.9% |
| | | 2020 | 92.8% | 95.8% | 67.6% | 79.6% |
| ***QPI 3(i): Molecular Analysis** - Proportion of patients with biopsied or resected gliomas who undergo 1p/19q molecular analysis of tumour tissue within 21 days of surgery | 90% | 2022 | 37.5% (3/8) | 69.2% (9/13) | 52.9% (9/17) | 55.3% |
| | | 2021 | 50.0% | 66.7% | 47.6% | 56.3% |
| | | 2020 | 66.7% | 71.4% | 78.3% | 74.0% |
| ***QPI 3(ii): Molecular Analysis** - Proportion of patients with biopsied or resected gliomas who undergo MGMT promoter hypermethylation status testing within 21 days of surgery | 90% | 2022 | 89.1% (41/46) | 91.5% (75/82) | 89.3% (67/75) | 90.1% |
| | | 2021 | 52.1% | 86.2% | 22.5% | 48.4% |
| | | 2020 | 65.9% | 76.1% | 92.4% | 81.1% |
| **QPI 4: Neuropathological Diagnosis** – Proportion of patients with brain/CNS cancer where the pathology report contains a full set of data items (as defined by the Royal College of Pathologists) including WHO Grade | 95% | 2022 | 93.2% (55/59) | 100% (102/102) | 92.2% (95/103) | 95.5% |
| | | 2021 | 98.3% | 100.0% | 97.6% | 98.5% |
| | | 2020 | 98.3% | 100% | 100% | 99.6% |

| | | | | | | |
|---|---|---|---|---|---|---|
| ***QPI 6: Maximal surgical resection** - Proportion of patients with malignant glioma (with enhancing component on pre-operative imaging) who undergo surgical resection where 90% or greater reduction in tumour volume is achieved provided it is considered consistent with safe outcome | 40% | 2022 | 45% (9/20) | 50.7% (35/69) | 63.9% (46/72) | 55.9% |
| | | 2021 | 48.0% | 59.6% | 60.5% | 58.3% |
| | | 2020 | 39.3% | 51.2% | 45.7% | 46.1% |
| ***QPI 7: Early Post-Operative Imaging** – Proportion of patients with malignant glioma (with enhancing component on pre-operative imaging) who receive early post-operative imaging with MRI within 3 days (72 hours) of surgical resection | 90% | 2022 | 100% (20/20) | 100% (69/69) | 95.8% (69/72) | 98.1% |
| | | 2021 | 100.0% | 100.0% | 98.8% | 99.4% |
| | | 2020 | 96.6% | 92.9% | 98.6% | 96.5% |
| **QPI 9: Access to Adjuvant Treatment** – Proportion of patients with high grade glioma (WHO Grade III and IV) undergoing surgery who commence their oncological treatment (chemotherapy, radiotherapy or chemoradiotherapy) within 6 weeks of surgery | 90% | 2022 | 72.5% (29/40) | 91.2% (62/68) | 87.3% (55/63) | 85.4% |
| | | 2021 | 61.5% | 83.3% | 95.2% | 84.2% |
| | | 2020 | 47.4% | 65.9% | 89.1% | 71.2% |
| **QPI 11: Seizure Management** – Proportion of patients with brain/CNS cancer presenting with seizures at diagnosis who are seen by a neurologist or a named ESN within four weeks of diagnosis | 95% | 2022 | 75% (18/24) | 36.2% (17/47) | 17.9% (5/28) | 40.4% |
| | | 2021 | 63.2% | 73.2% | 23.3% | 54.4% |
| | | 2020 | 60.0% | 56.4% | 7.3% | 37.0% |
| **QPI 12: Key Worker** - Proportion of patients with Brain/CNS cancer who have an identified key worker by the first MDT meeting | 95% | 2022 | 42.3% (30/71) | 90.1% (100/111) | 0% (0/98) | 46.4% |
| | | 2021 | 40.6% | 84.9% | 0.0% | 37.4% |
| | | 2020 | 72.1% | 43.5% | 0.0% | 31.8% |

| Quality Performance Indicator (QPI) | Performance by NHS Region | | | | | |
|---|---|---|---|---|---|---|
| | QPI target | Year | NCA | SCAN | WoSCAN | Scotland |
| ***QPI 13: Mortality-Surgery** - Proportion of patients with Brain/CNS cancer who die within 30 days of surgery | <5% | 2022 | 4.8% (3/62) | 1% (1/102) | 2.8% (3/107) | 2.6% |
| | | 2021 | 5.2% | 9.0% | 2.3% | 5.0% |
| | | 2020 | 3.6% | 5.4% | 0.9% | 2.9% |
| **QPI 13: Mortality-Chemoradiotherapy** - Proportion of patients with Brain/CNS cancer who die within 30 days of chemoradiotherapy | <5% | 2022 | 5.9% (2/34) | 0% (0/37) | 2.2% (1/45) | 2.6% |
| | | 2021 | 3.8% | 2.6% | 5.8% | 4.5% |
| | | 2020 | 0.0% | 4.3% | 0.0% | 1.0% |
| **QPI 13: Mortality- Radiotherapy** - Proportion of patients with Brain/CNS cancer who die within 30 days of radiotherapy | <5% | 2022 | 11.1% (1/9) | 3.6% (2/56) | 0% (0/33) | 3.1% |
| | | 2021 | 7.7% | 14.3% | 3.7% | 9.8% |
| | | 2020 | 0.0% | 4.2% | 3.1% | 3.2% |

**Small numbers in some Boards - percentage comparisons over a single year should be viewed with caution*

# Summary

## Conclusions and Action Required

The Scottish Adult Neuro-Oncology Network (SANON) is encouraged by the continued support and commitment of Network members to deliver a high quality service to brain/CNS cancer patients across the country. The results presented in this report demonstrate that patients with brain/CNS cancer receive a consistent and improving standard of care across all geographical locations. Case ascertainment and data capture is of a high standard enabling robust assessment of performance against QPIs. However, despite improvements in a number of QPI measures against historical results, specific challenges exist in all units. In particular, QPI 3(i) – Molecular Analysis, QPI 9 – Access to Adjuvant Treatment, QPI 11-Seizure Management and QPI 12 – Key Worker all remain challenging in all units.

In line with the agreed regional governance process, each NHS Board was asked to complete a Performance Summary Report (PSR), providing detailed comments where QPI targets were not met. In the main, feedback from the Boards indicates valid clinical reasons or that, in some cases, patient choice or co-morbidities have influenced patient management. There are some areas where there are specific challenges that require action either within or outwith specific boards/centres which will be discussed later in the report. Additionally, these Boards have indicated where positive action has already been taken at a local level to address any issues highlighted through the QPI data analysis. It is anticipated that these positive changes will result in improved performance going forward.

### Action required:

QPI 1: Documentation of Performance Status
This should continue to be the responsibility of the MDT Chair. Responses regarding review of cases is listed below

- SCAN will continue to retain a rota for a nominated person to chair the MDT each week to improve consistency in documenting Karnofsky Performance Status (KPS) at the time of MDT
- Grampian will continue to remind all surgeons have been reminded about stating KPS when listing patients
- Highland: Has improved attempts to ensure that KPS is recorded for newly diagnosed patients. Highland will continue to communicate the need to ensure a PS is recorded on all outcome forms going forward

QPI 2: Documentation of Multi-disciplinary Team Meeting (MDT)

- NHS GGC were pleased to note the improvement in performance from 66.7% last year, although below target level. Improvement actions were not presently identified, but GGC will keep these figures under review.

QPI 3(ii): Molecular Analysis

- There have been notable improvements across Scotland with SCAN meeting, and both NCA and WoSCAN within a narrow margin of achieving, the target

QPI 4: Neuropathological Diagnosis:

- There has been a recent drop in the achievement of this QPI with NCA and WoSCAN dropping slightly below the target.

QPI 6: Maximal Surgical Resection

- All regions met this target for the second consecutive year

QPI 9: Access to Adjuvant Treatment

- In view of the clinical circumstances in the cases, improvement actions were not identified

QPI 11: Seizure Management

- SCAN to address workforce capacity and successional planning
- NHS GGC to develop resource with Epilepsy Neurology Consultants and Epilepsy Nurses

QPI 12: Key Worker

- SCAN will continue to ensure that key worker is consistently recorded for all eligible patients at the time of MDT discussion.
- Aberdeen/Inverness MDT to address documentation issues
- NHS GGC remarked that key worker allocation at first MDT discussion when definitive diagnosis is not yet known is inappropriate for pathway and plan to highlight at the formal review. Additionally, a section for recording of key worker identification to be added to MDT proforma.

SANON, MDTs and neuro-oncology centres are asked to develop local Action/Improvement Plans in response to the findings presented in the report. Completed Action Plans should be returned to NSS IMS within two months of publication of this report.

Progress against these plans are monitored by SANON and any service or clinical issue which SANON considers not to have been adequately addressed will be escalated to the NHS Board Territorial Lead Cancer Clinician and Regional Lead Cancer Clinician. SANON plans to discuss challenging QPIs, where targets have not been met with Regional Cancer Leads and where appropriate the Territorial Lead Cancer Clinician.

Additionally, progress will be reported annually to the Regional Cancer Operational Group (RCOG) by NHS Board Territorial Lead Cancer Clinicians and NMCN Clinical Leads, and nationally on a three-yearly basis to Healthcare Improvement Scotland as part of the governance processes set out in CEL 06 (2012).

# Introduction

The purpose of this report is to present an assessment of the performance of Adult Neuro-Oncology services using clinical audit data relating to patients diagnosed with brain and central nervous system (CNS) cancers across Scotland from 01 January to 31 December 2022, for the ninth consecutive year. Results are measured against the Brain and CNS Cancer Quality Performance Indicators[1] (QPIs) which were introduced for patients diagnosed on or after 01 January 2014.

In order to ensure the success of the National Cancer QPIs in driving quality improvement in cancer care across NHS Scotland it is critical that the QPIs continue to be clinically relevant and focus on areas which will result in improvements to the quality of patient care. A programme of formal review of all QPIs was implemented whereby all tumour specific QPIs were reviewed following three years of comparative reporting. Formal review of the Brain/CNS QPIs was initiated in October 2020, with the revised QPIs published in February 2021. The next formal review of the Brain/CNS will be conducted in 2023.

Twelve months of data is presented alongside data for previous years where results have remained comparable after the formal review. Future reports will continue to compare clinical audit data in successive years to further illustrate trends.

# Background

The Scottish Adult Neuro-Oncology Network (SANON) was established in 2006. The aim of the network is to link together health professionals, researchers, patients, their families and carers, social care, voluntary sector representatives and external companies to ensure the delivery of equitable, high quality and clinically effective care for patients in Scotland[7].

The table below details the four MDTs which manage all cases of brain and CNS cancer in Scotland. There are five specialist centres carrying out neuro-oncology treatment in Scotland and these are considered the centres for specialist treatment, which includes surgery (not in Inverness), chemotherapy and radiotherapy. Patients may receive diagnostic or palliative care in their local hospital where appropriate; however the majority of patients are referred to one of the four MDTs for specialist management.

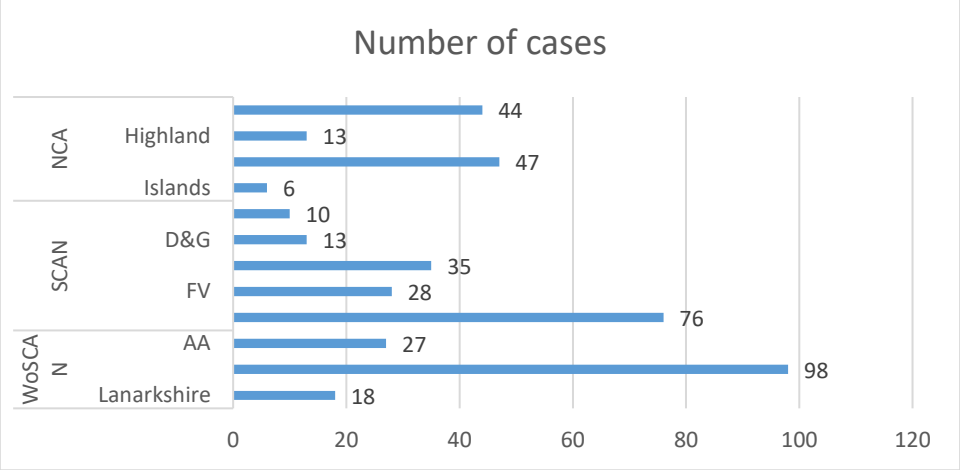
| Neuro-oncology MDT | Constituent Hospital(s) |
|---|---|
| Aberdeen/Inverness | Aberdeen Royal Infirmary (surgery and oncology)<br>Raigmore Hospital – Inverness (oncology) |
| Dundee | Ninewells Hospital (surgery and oncology) |
| Edinburgh | Edinburgh Royal Infirmary (surgery from July 2020) and<br>Western General Hospital (surgery until June 2020 and oncology) |
| Glasgow | Queen Elizabeth University Hospital (surgery) and<br>Beatson West of Scotland Cancer Centre (oncology) |

# National Context

Brain and CNS cancers are relatively rare cancers with approximately 435 adult cases diagnosed in Scotland each year between 2016 and 2020[4]. The 2022 audit identified 415 patients diagnosed with a new primary cancer of the brain or CNS in Scotland.

The distribution of the 415 newly diagnosed cases in 2022 is presented in Figure 1 by location of diagnosis across the fourteen NHS Boards. The South-East of Scotland Cancer Network (SCAN) recorded 39% of new diagnosis with 162 new cases, West of Scotland Cancer Network (WoSCAN) recorded 34.5% with 143 new cases and North Cancer Alliance (NCA) recorded 26.5% with 110 new cases of brain and CNS cancers captured by audit in 2022. This is in line with the adult population distribution in this region as 2021 mid-year population estimates[8] show that 46.0% of the Scottish adult population reside within West of Scotland (WoS) region.

**Figure 1: Number of patients diagnosed with brain or CNS cancer across Scotland by NHS Board, 2022**




| NCA | Grampian | Highland | Tayside | Island Boards* | | Total |
|---|---|---|---|---|---|---|
| No. of cases | 44 | 13 | 47 | 6 | | 110 |
| SCAN | Borders | D&G | Fife | Lothian | FV | Total |
| No. of cases | 10 | 13 | 35 | 76 | 28 | 162 |
| WoSCAN | A&A | GGC | Lanarkshire | | | Total |
| No. of cases | 27 | 98 | 18 | | | 143 |

** Island Boards- Orkney, Shetland and Western Isles*

**Patients diagnosed in Forth Valley are managed through the Edinburgh MDT and are included in SCAN performance for QPI results

The tumour morphology of cases diagnosed in the audit of 2022 data is detailed below in Table 1, and is classified according to the International Classification of Diseases for Oncology (ICD-O 3). The majority of cases have astrocytic/oligodendroglial tumour morphology. Where cases are noted as "Not Applicable", no sample was sent to pathology for testing.

**Table 1: Tumour morphology for patients diagnosed with Brain/CNS cancer across Scotland by Region of Diagnosis, 2022**

| | Region of Diagnosis | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | NCA | | SCAN | | WOSCAN | | Scotland | |
| Tumour Type | n | % | n | % | n | % | n | % |
| Astrocytic and Oligodendroglial | 61 | 55.5% | 97 | 59.9% | 99 | 69.2% | 257 | 61.9% |
| Embryonal | 0 | 0.0% | 2 | 1.2% | 2 | 1.4% | 4 | 1.0% |
| Ependymal | 0 | 0.0% | 1 | 0.6% | 0 | 0.0% | 1 | 0.2% |
| Meningioma | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Pineal Region | 0 | 0.0% | 0 | 0.0% | 1 | 0.7% | 1 | 0.2% |
| Other Glioma | 4 | 3.6% | 1 | 0.6% | 1 | 0.7% | 6 | 1.4% |
| Other Astrocytic | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Negative Pathology | 0 | 0.0% | 0 | 0.0% | 1 | 0.7% | 1 | 0.2% |
| Not Applicable | 45 | 40.9% | 60 | 37.0% | 39 | 27.3% | 144 | 34.7% |
| Not Assessable | 0 | 0.0% | 1 | 0.6% | 0 | 0.0% | 1 | 0.2% |
| Not Recorded | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| Total No of Pts | 110 | 100.0% | 162 | 100.0% | 143 | 100.0% | 415 | 100.0% |

Table 2 shows a description of the WHO classification of tumour grade. This is a scale to determine the aggressiveness of tumours and to estimate prognosis.

**Table 2: Description of the WHO tumour grade classification**

| Grade | Description |
|---|---|
| 1 | Tumours with low proliferative potential, a frequently discreet nature and a possibility of cure following surgical resection alone. |
| 2 | Generally infiltrating tumours low in mitotic activity but with a potential to recur. |
| 3 | Histological evidence of malignancy, generally in the form of mitotic activity, clearly expressed infiltrative capabilities and anaplasia. |
| 4 | Mitotically active, necrosis prone neoplasms, generally associated with a rapid pre- and post-operative evolution of the disease. |

Table 3 illustrates the proportion of cases from the 2022 audit assigned to each tumour grade. The majority of cases are Grade 4 (53.7%) which is associated with poorer outcomes. Cases have been assigned as “Not Applicable” where no sample has been sent to pathology for analysis.

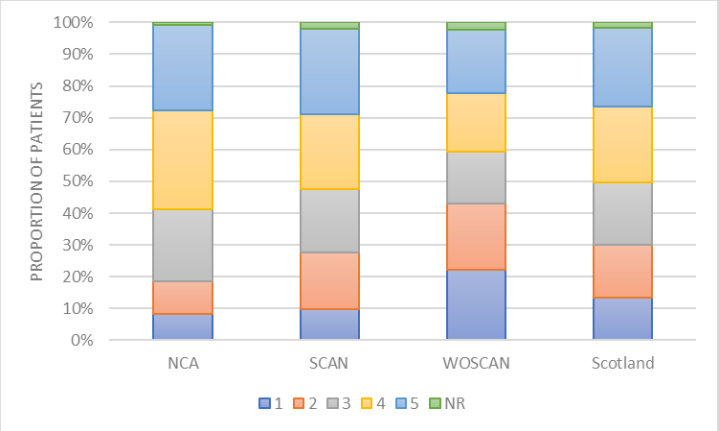
**Table 3: Tumour grade for patients diagnosed with Brain/CNS cancer across Scotland by Region of Diagnosis, 2022**

| | Region of Diagnosis | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | NCA | | SCAN | | WOSCAN | | Scotland | |
| | n | % | n | % | n | % | n | % |
| **1** | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% |
| **2** | 7 | 6.4% | 8 | 4.9% | 12 | 8.4% | 27 | 6.5% |
| **3** | 5 | 4.5% | 6 | 3.7% | 6 | 4.2% | 17 | 4.1% |
| **4** | 53 | 48.2% | 86 | 53.1% | 84 | 58.7% | 223 | 53.7% |
| **Not Applicable** | 45 | 40.9% | 61 | 37.7% | 40 | 28.0% | 146 | 35.2% |
| **Not Recorded** | 0 | 0.0% | 1 | 0.6% | 1 | 0.7% | 2 | 0.5% |
| **Total No of Pts** | 110 | 100.0% | 162 | 100.0% | 143 | 100.0% | 415 | 100.0% |

## Deprivation

The figures below show the Scottish Index of Multiple Deprivation (SIMD) 2022 quintiles for patients diagnosed with brain and CNS cancer; with 1 equating to the most deprived postcodes and 5 equating to the least deprived.

**Fig 2: Proportion of patients diagnosed with brain and CNS cancer in Scotland in 2022 by Deprivation Category**



# Incidence and survival

Brain and CNS cancers are relatively rare cancers with approximately 468 diagnoses (9 cases per 100,000) in Scotland in 2021.[4] This is an increase by 3% and 1%, respectively, compared with 2019. The percentage frequency of brain and CNS cancers (malignant and non-malignant) in Scotland is comparatively low at 1.3% of all cancers diagnosed in 2021. It was ranked as the 18th most commonly diagnosed cancer in females and the 15th most commonly diagnosed cancer in males in Scotland in 2021.[4]

The incidence of brain and CNS cancers has increased in males, by 8% and females, by 3%, since 2019. Overall, there has been an increase in incidence of 3%and 1% respectively for brain and CNS cancers.[4] The number of death registrations in 2021 for brain and CNS cancers was 370 a rate of 6.6%.[5] Brain and CNS cancers are ranked as the 17th most common cause of death from cancer and accounted for 2.2% of all deaths from cancer in 2021.[6]

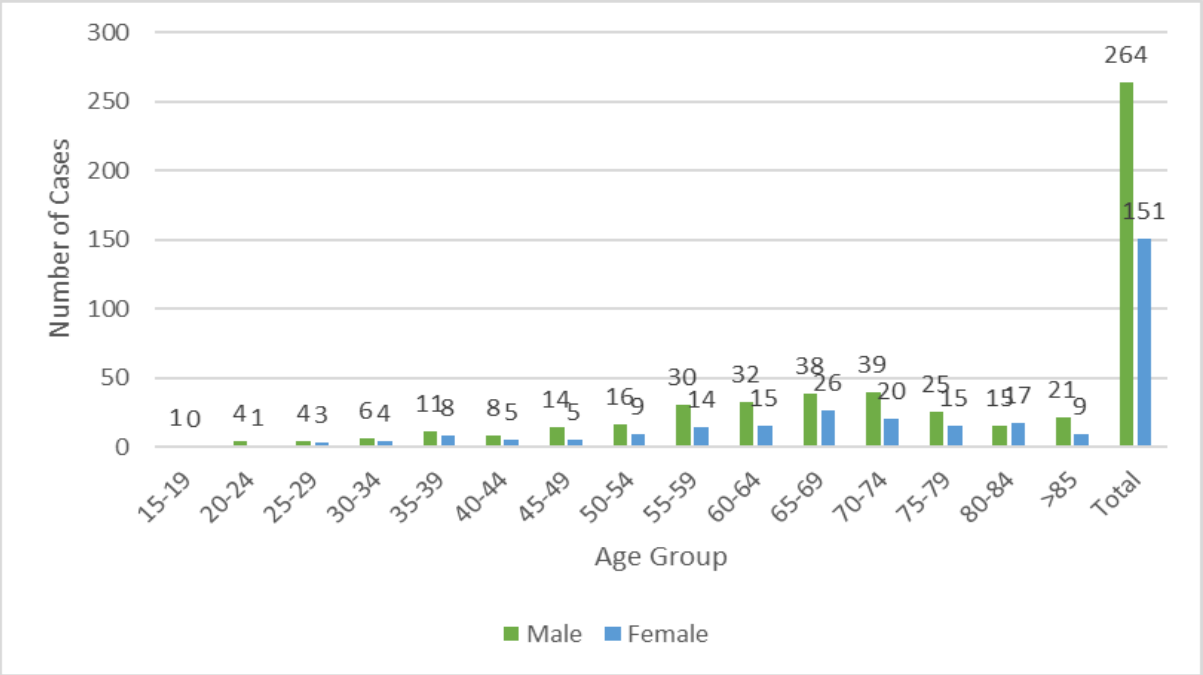
Relative survival at one year is increasing for brain and CNS cancers while relative survival at five years is decreasing for both males and females.[6] Table 4 shows the percentage change in survival rates for patients diagnosed between 2007 and 2011 compared to those diagnosed between 2013 and 2017.

**Table 4: Percentage change in relative survival for brain and CNS cancer in Scotland at 1 year and 5 years from 2007-2011 to 2013-2017. Source data: PHS[6]**

| Age 15 – 99 years | Relative survival at 1 year (%) | | | Relative survival at 5 years (%) | | |
|---|---|---|---|---|---|---|
| | 2007 - 2011 | 2013 – 2017 | % change | 2007 - 2011 | 2013 – 2017 | % change |
| Male | 41.2% | 42.9 % | + 4.1 % | 15.1% | 13.9 % | - 8.0 % |
| Female | 39.5% | 38.4 % | + 2.8 % | 15.8% | 15.1 % | - 4.4 % |

This report includes all cases aged 15 and over diagnosed in Scotland in 2022. The age distribution of new diagnoses for males and females is illustrated in Figure 2. The incidence of brain and CNS cancer is higher in males with 63.6%, while 36.4% were females. Although the majority of cases do occur in older individuals for both sexes, it is noted that an eighth of brain and CNS cancers were diagnosed in individuals under the age of 55 years (12.6%). This is lower than previous years.

**Figure 3: Number of patients diagnosed with brain and CNS cancers in Scotland in 2022 by age group and sex**




# Methodology

Further detail on the audit and analysis methodology and data quality is available in the meta data within Appendix 1.

# Results and Action Required

Results of the analysis of Brain and CNS Cancer QPIs are set out in the following sections. Graphs and charts have been provided where this aids interpretation and, where appropriate, numbers have also been included to provide context.

Data are presented for each QPI by region of diagnosis or by location of treatment (neuro-oncology centre) both graphically and in tabular format, with performance also shown as an overall national representation. Where possible, 3 years of data (Years 7-9) data is presented.

Where the number of cases meeting the denominator criteria for any indicator is between one and four, the percentage calculation has not been shown on any associated charts or tables. This is to avoid any unwarranted variation associated with small numbers and to minimise the risk of disclosure. Any charts or tables impacted by this restricted data are denoted with a dash (-). An asterisk (*) is applied to indicate a denominator of zero and to distinguish between this and a 0% performance.

Specific Board, regional and national actions have been identified to address issues highlighted through the data analysis.

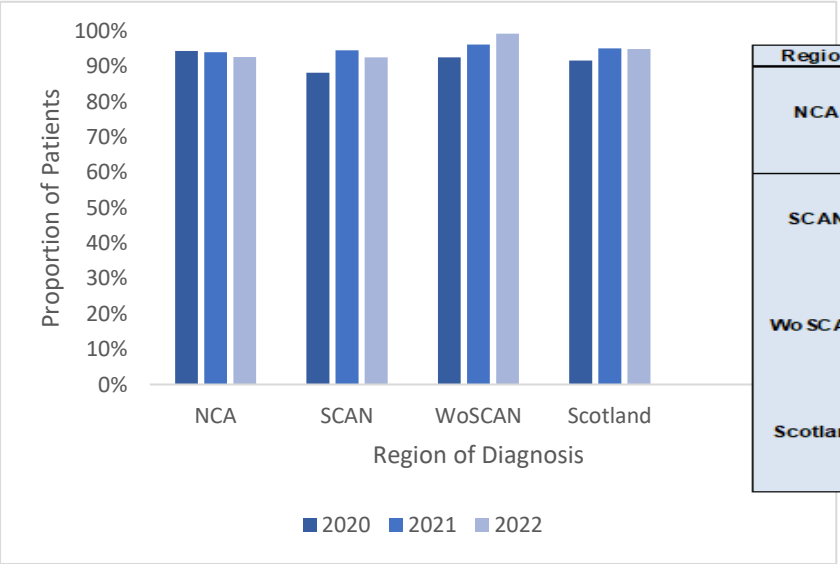
# QPI 1: Documentation of Performance Status

Performance status is an important prognostic indicator in patients with brain/CNS cancer. Accurate communication of performance status is vital in guiding complex management decisions, including recruitment into clinical trials[1]. In patients referred from other sites, who have not yet met a member of the neuro-oncology MDT, an estimated performance status should be given based on the available information from the referring site[1].

The tolerance within the 95% target against QPI 1 accounts for situations where there is insufficient information from the referring site to estimate the World Health Organisation (WHO) performance status.

| | |
|---|---|
| QPI 1: | Patients with newly-diagnosed brain/central nervous system (CNS) cancer should have a world health organisation (WHO) performance status documented at time of MDT discussion. |
| Description: | Proportion of newly diagnosed patients with brain/CNS cancer who have a documented WHO performance status at the time of MDT discussion. |
| Numerator: | Number of newly diagnosed patients with brain/CNS cancer discussed at MDT meeting with a documented WHO performance status at the time of MDT discussion. |
| Denominator: | All newly diagnosed patients with brain/CNS cancer discussed at MDT meeting |
| Exclusions: | None |
| Target: | 95% |

**Figure 4: Proportion of newly diagnosed patients with brain/CNS cancer who have a documented WHO performance status at the time of MDT discussion 2020 - 2022**




| Region | Year | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| NCA | N | 85 | 94 | 101 |
| | D | 90 | 100 | 109 |
| | % | 94.4% | 94.0% | 92.7% |
| SCAN | N | 97 | 123 | 150 |
| | D | 100 | 130 | 162 |
| | % | 88.2 | 94.6 | 92.6% |
| Wo SCAN | N | 138 | 150 | 142 |
| | D | 149 | 156 | 143 |
| | % | 92.6% | 96.2% | 99.3% |
| Scotland | N | 320 | 367 | 393 |
| | D | 349 | 386 | 414 |
| | % | 91.7% | 95.1% | 94.9% |

(-) Data not shown; denominator less than 5

(*) denotes a zero.

Overall national performance was 94.9% practically meeting the 95% target. WoSCAN was the only region to meet the 95% target with performance ranging from 92.6% in SCAN to 99.3% in WoSCAN. Both SCAN and NCA narrowly missed the target with 92.6% and 92.7%, respectively. MDTs have reviewed cases not meeting the QPI and provided feedback.

The Edinburgh MDT stated that all cases have been reviewed and 12 cases did not have performance status recorded at time of first MDT discussion. SCAN will continue to retain a rota for a nominated person to chair the MDT each week and work to improve the consistency in documenting KPS at the time of MDM.

The Aberdeen/ Inverness MDT commented that only 5 cases did not have performance status recorded at MDT. Four should have been, but were added onto MDT at short notice. One was not discussed as case originally appeared to be a brain abscess not a tumour. There have been repeated reminders to all surgeons. Unfortunately, late additions to the meeting continue, partly driven by QPI 2.

NHS Highland: One patient out of the 13 was missed. There has been an attempt to ensure that KPS is recorded for newly diagnosed patients. Highland will ask the MDT coordinator to ensure a PS is recorded on all outcome forms going forward.

## Action required:

- SCAN to retain a rota for a nominated person to chair the MDT each week to further improve the documentation of KPS for 2023 cohort.
- NCA surgeons will continue to be reminded about stating PS when listing patients,

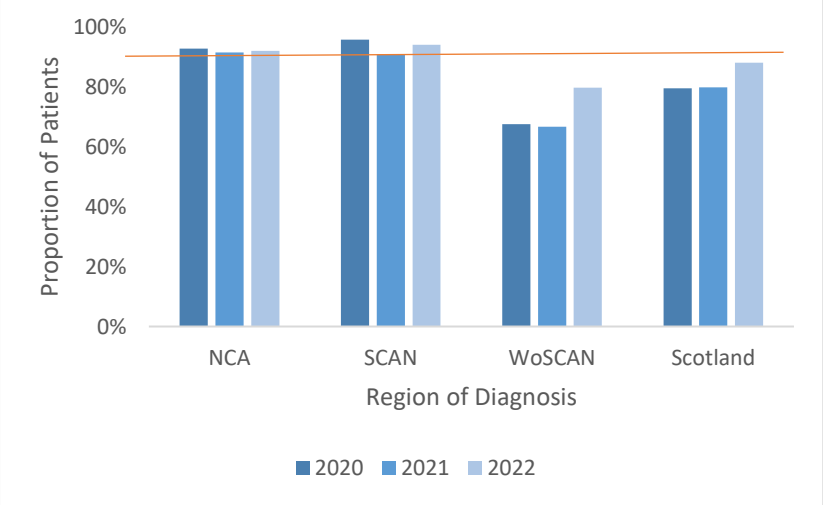
# QPI 2: Multi-disciplinary Team Meeting (MDT)

Evidence suggests that patients with cancer managed by an MDT have a better outcome. There is also evidence that the multidisciplinary management of patients increases their overall satisfaction with care.[1]

Discussion prior to definitive management decisions being made provides reassurance that patients are being managed appropriately. In the majority of cases, patients with brain/CNS cancer will undergo surgery (biopsy or resection) as their initial intervention prior to any treatment. The measurement of this QPI will therefore focus on discussion of patients at this initial point within the clinical pathway.[1]

| | |
|---|---|
| QPI 2: | Patients with Brain/CNS cancer should be discussed by a multidisciplinary (MDT) team prior to any surgical procedure. |
| Description: | Proportion of patients with Brain/CNS cancer who are discussed at MDT meeting before surgery. |
| Numerator: | Number of patients with Brain/CNS cancer discussed at MDT before surgery. |
| Denominator: | All patients with Brain/CNS cancer undergoing surgery. |
| Exclusions: | Patients who died before first treatment. |
| Target: | 90% |

**Figure 5: Proportion of patients with Brain/CNS cancer who are discussed at MDT meeting before surgery, 2020 – 2022**




| Year | Year | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| NCA | N | 48 | 54 | 59 |
| | D | 58 | 59 | 64 |
| | % | 92.8% | 91.5% | 92.2% |
| SCAN | N | 68 | 80 | 96 |
| | D | 71 | 88 | 102 |
| | % | 95.8% | 90.9% | 94.1% |
| WoSCAN | N | 75 | 84 | 83 |
| | D | 111 | 126 | 104 |
| | % | 67.6% | 66.7% | 79.8% |
| Scotland | N | 191 | 218 | 238 |
| | D | 240 | 273 | 270 |
| | % | 79.6% | 79.9% | 88.1% |

(-) Data is not shown; denominator less than 5

(*) denotes a zero

During a previous QPI formal review, the target, from the 2020 cohort, was reduced from 95% to 90% to account for patients that require urgent treatment.

NCA and SCAN met the 90% target with performance ranging from 79.8% in WoSCAN to 94.1% in SCAN. The overall national performance was 88.1%. Whilst WoSCAN there was a sizeable margin between WoSCAN performance on this QPI compared to target, there was also a large margin and significant improvement compared to previous years.

Glasgow MDT commented that all patients were discussed by the MDT. Those failing were discussed post-operatively at the next available MDT held weekly. Pathway review for all patients failing the QPI was undertaken, findings as follows:

- 4 patients had incidental findings of cancer at surgery for low-grade or benign lesions and could not have been discussed pre-operatively. These cases were observed prior to intervention, which was only prompted by change in biology.
- A further 17 surgical patients (4 of which were diagnostic biopsy only) were all admitted or referred later in the week and proceeded to surgery prior to the next MDT. Therefore, no MDT available for discussion of these patients prior to surgical procedure/intervention. 9 of the 17 cases (52.9%) were of an urgent or emergency nature and could not wait for MDT, with the other cases assigned to the next available theatre list. There is no provision to require the operating surgeon to report the reasons of their decision to perform surgery prior to MDT discussion, so it is difficult to explain why these 8 cases were not discussed. GGC were pleased to note the improvement in performance from 66.7% last year, although this remains below the target level. Given the need for emergency surgery in a proportion of cases (acknowledged by the tolerance in the QPI target) improvement actions are not presently identified, but GGC will keep these figures under review.

## Action required:

- NHS GGC will continue to review these figures which will hopefully continue to improve

## QPI 3: Molecular Analysis

Combined loss of 1p/19q in gliomas is associated with a more favourable response to therapy (chemotherapy or radiotherapy) and is associated with considerably better prognosis when compared to tumours with intact 1p/19q. As such, where indicated, 1p/19q analysis should be carried out to help determine treatment and provide information on predicted tumour response to therapy and prognosis.

Determination of MGMT promoter methylation status predicts response to therapy (chemotherapy or concomitant chemoradiotherapy) in glioblastomas and assists in determination of prognosis. As such, where indicated, MGMT promoter methylation analysis should be carried out to help determine treatment and provide information on predicted tumour response to therapy and prognosis.

A 21-day timeframe is associated with this QPI to ensure that the molecular analysis is undertaken and reported before treatment takes place.

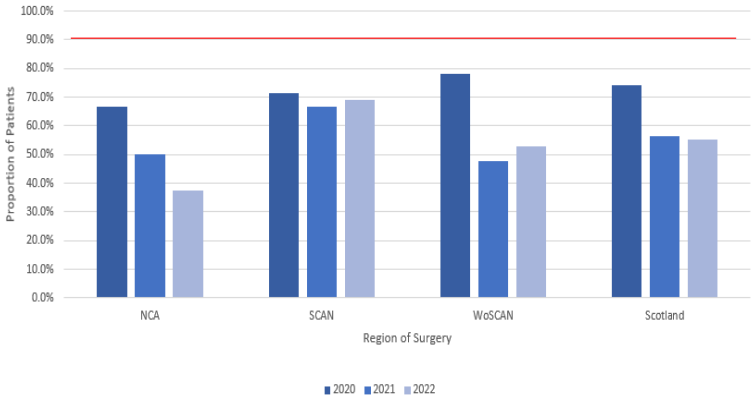
| | |
|---|---|
| QPI 3(i): | Patients with biopsied or resected gliomas should have molecular analysis performed on the tumour tissue within 21 days of surgery to inform treatment decision making. |
| Description: | Proportion of patients with biopsied or resected Grade II or III gliomas who have the tumour tested for combined loss of 1p/19q. |
| Numerator: | Number of patients with a Grade II or III glioma undergoing surgery where tissue sample is tested for 1p/19q within 21 days of surgery. |
| Denominator: | All patients with a Grade II or III glioma undergoing surgery. |
| Exclusions: | No exclusions. |
| Target: | 90% |

No centre met the 90% target with performance ranging from 33.3% in Aberdeen to 69.2% in Edinburgh. The overall national performance was 55.3%. Boards have reviewed cases not meeting the target and provided feedback.

As this is an Edinburgh or Glasgow based service, other centres indicated that there is limited scope for improvement at a local level. It was noted that the Edinburgh Pathologist confirmed 1 patient did not need the test.

Edinburgh commented that all cases have been reviewed. 3 patients did not have 1p/19q analysis performed; 1 patient did not have 1p/19q analysis done within 21-days of surgery. The 1p19q testing is becoming redundant for a subset of cancer types. The new WHO classification and an update of the molecular QPIs to reflect the changes shall be considered at this year's formal review.

**Figure 6: Proportion of patients by Surgical Centre with biopsied or resected Grade II or III gliomas who have the tumour tested for combined loss of 1p/19q, 2020 – 2022**




| Year | Year | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Aberdeen | N | 4 | - | 2 |
| | D | 6 | - | 6 |
| | % | 66.7% | 50% | 33.3% |
| Dundee | N | - | - | - |
| | D | - | - | - |
| | % | 0% | 50% | 50% |
| Edinburgh | N | 15 | 14 | 9 |
| | D | 21 | 21 | 13 |
| | % | 71.4% | 66.7% | 69.2% |
| Glasgow | N | 18 | 10 | 9 |
| | D | 23 | 21 | 17 |
| | % | 78.3% | 47.6% | 52.9% |
| Scotland | N | 37 | 27 | 21 |
| | D | 50 | 48 | 38 |
| | % | 74% | 56.3% | 55.3% |

(-) Data is not shown; denominator less than 5

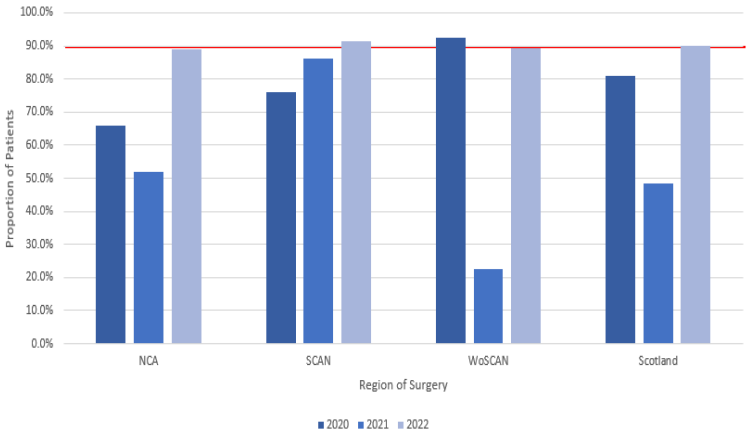
(*) denotes a zero

Glasgow recorded 5 patients that were delayed by 1-2 days and a further 3 failed the target by 4-8 days. Administration workforce issues impacted some supplementary molecular reports.

Plan: Work towards condensing processing times in Genetics and reporting. Raise at upcoming formal review an update of the molecular QPIs.

| | |
|---|---|
| QPI 3(ii): | Patients with biopsied or resected gliomas should have molecular analysis performed on the tumour tissue within 21 days of surgery to inform treatment decision making. |
| Description: | Proportion of patients with biopsied or resected glioblastomas who have the tumour tested for MGMT promoter methylation status. |
| Numerator: | Number of patients with glioblastomas undergoing surgery where tissue sample is assessed for MGMT promoter hypermethylation status within 21 days of surgery. |
| Denominator: | All patients with glioblastomas undergoing surgery. |
| Exclusions: | No exclusions. |
| Target: | 90% |

**Figure 7: Proportion of patients with biopsied or resected glioblastomas who have the tumour tested for MGMT promoter methylation status, 2020 – 2022**




| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Aberdeen | N | 16 | 18 | 19 |
| | D | 28 | 33 | 24 |
| | % | 57.1% | 54.5% | 79.2% |
| Dundee | N | 13 | 7 | 22 |
| | D | 16 | 15 | 22 |
| | % | 81.3% | 46.7% | 100% |
| Edinburgh | N | 35 | 56 | 75 |
| | D | 46 | 65 | 82 |
| | % | 76.1% | 86.2% | 91.5% |
| Glasgow | N | 73 | 23 | 67 |
| | D | 79 | 102 | 75 |
| | % | 92.4% | 22.5% | 89.3% |
| Scotland | N | 137 | 104 | 183 |
| | D | 169 | 215 | 203 |
| | % | 81.1% | 48.4% | 90.1% |

The overall national performance improved markedly since last year and managed to meet the target at 90.1%. Dundee and Edinburgh cancer centres exceeded, and Glasgow practically reached, the 90% target. Performance in the centres ranged from 79.2% in Aberdeen to 100% in Dundee, but all centres have improved their performance. Boards commented that these QPI's are outwith local control as samples are processed in Glasgow and Lothian.

Glasgow: 2 patients failed as "*Assessment inconclusive by means of pyrosequencing analysis*" which is recorded as failed analysis. The actual reporting of this result on MGMT is within the turnaround time of 21 days. If these were included as target met, the overall QPI target would be achieved. This will be considered at upcoming formal review.

4 patients are over target by a range of 1-4 days. 1 patient's pathology report states "Molecular data: Pending" - has not been added to report patient died 23 days post-surgery.

Due to administrative workforce issues and prioritisation scheme, integration of supplementary molecular reports may be delayed.

## Action Required:

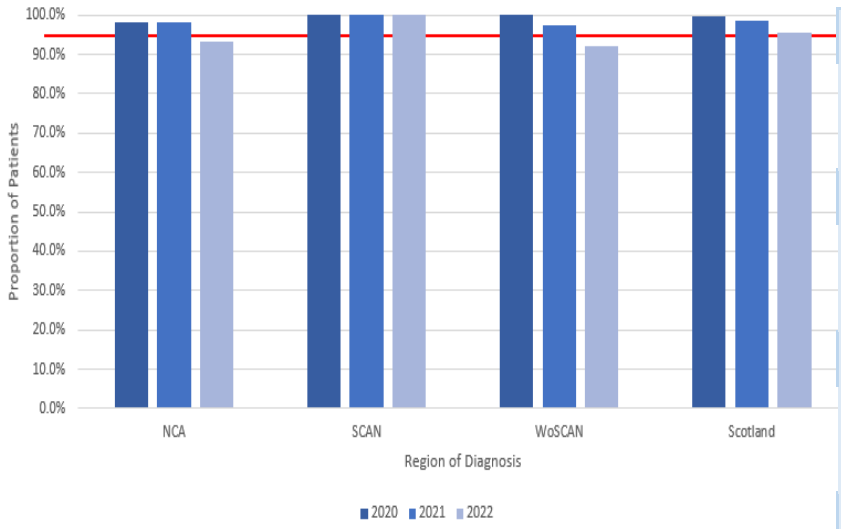
Work towards condensing processing times in Genetics and typing reports on Friday late afternoon/evening. Raise at upcoming formal review an update of the molecular QPIs.

# QPI 4: Neuropathological Diagnosis

Accurate and robust standardisation of tumour diagnosis is required for appropriate patient management. Neuropathologists should report to the standards defined by the Royal College of Pathologists in 'Standards and Datasets for Reporting Cancers: Dataset for Tumours of the Central Nervous System, including Pituitary Gland'. [1]

| | |
|---|---|
| QPI 4: | All pathology reports for brain/central nervous system (CNS) cancer should contain full pathology information (including tumour type as described in World Health Organisation (WHO) Classification of CNS tumours (2016) and WHO grade where appropriate) to inform patient management. |
| Description: | Proportion of patients with brain/CNS cancer where the pathology report contains a full set of data items (as defined by the Royal College of Pathologists). |
| Numerator: | Number of patients with a histological diagnosis of brain/CNS cancer where histological pathology report contains all data items. |
| Denominator: | All patients with a histological diagnosis of brain/CNS cancer. |
| Exclusions: | None. |
| Target: | 95% |

**Figure 8: Proportion of patients with brain/CNS cancer where the pathology report contains a full set of data items (as defined by the Royal College of Pathologists), 2020 – 2022**




| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| NCA | N | 57 | 58 | 55 |
| | D | 58 | 59 | 59 |
| | % | 98.3% | 98.3% | 93.2% |
| SCAN | N | 73 | 90 | 102 |
| | D | 73 | 90 | 102 |
| | % | 100% | 100% | 100% |
| WoSCAN | N | 111 | 122 | 95 |
| | D | 111 | 125 | 103 |
| | % | 100.0% | 97.6% | 92.2% |
| Scotland | N | 241 | 270 | 252 |
| | D | 242 | 274 | 264 |
| | % | 99.6% | 98.5% | 95.5% |

SCAN achieved the 95% target. NCA and WoSCAN narrowly failed to reach the target. Performance ranged from 92.2% in WoSCAN to 100% in SCAN. The overall national performance was 95.5%.

WoSCAN missed the target (92.2%) The cases failing to meet the QPI are due to, *"site of tumour"* not being recorded. This failure has occurred due to the surgical request not containing the relevant site information therefore it is unable to be documented in the pathology report. All neuropathology derived data is included in reporting, non-compliant cases reflect missing clinical information from requesters.

Boards noted that pathology reports are handled by the reporting NHS board (Lothian) – and local boards have no control over content.

## Action Required:

Ensure appropriate recording of all data items on surgical request.

Tayside now have a process in place and communicated where the full report will be sent to Edinburgh for every patient.

# QPI 6: Maximal Surgical Resection

The extent of surgical resection is an independent prognostic factor in Grade III and Grade IV malignant gliomas. Maximal safe surgical resection (≥90%) prolongs time to tumour recurrence and is associated with prolonged survival. Maximum safe surgical resection is recommended by several published guidelines.

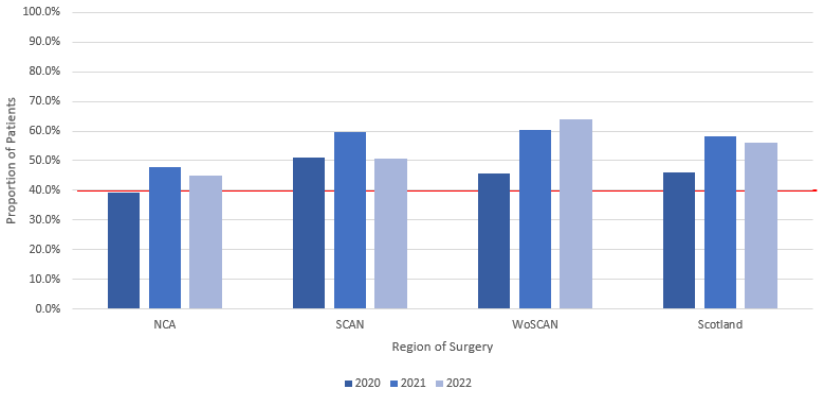
Measurement of this QPI will focus on those patients with the intention for maximal safe surgical resection. This will be identified pre-operatively and documented at the MDT.

| | |
|---|---|
| QPI 6: | Wherever possible patients should undergo maximal surgical resection of malignant gliomas. |
| Description: | Proportion of patients with malignant glioma (with enhancing component on pre-operative imaging) who undergo surgical resection where ≥90% reduction in tumour volume is achieved provided it is considered consistent with safe outcome. |
| Numerator: | Number of patients with resectable malignant glioma (with enhancing component on pre-operative imaging) undergoing surgical resection where ≥90% reduction in tumour volume is achieved. |
| Denominator: | All patients with malignant glioma (with enhancing component on pre-operative imaging) undergoing surgical resection. |
| Exclusions: | • Patients undergoing biopsy only. |
| Target: | 40% |

At formal review the exclusion ‘patients in whom surgeons’ intent is partial resection / debulking surgery’ was removed. This allows for benchmarking against the 40% international standard and is easier to define and measure comparably between the 3 regions.

All MDTs met the 40% target, with performance ranging from 41.7% in Aberdeen to 63.9% in Glasgow Centre. The overall national performance was 55.9% meeting the 40% target comfortably.

**Figure 10: Proportion of patients with malignant glioma undergoing surgical resection where ≥90% reduction in tumour volume is achieved, 2020 – 2022**



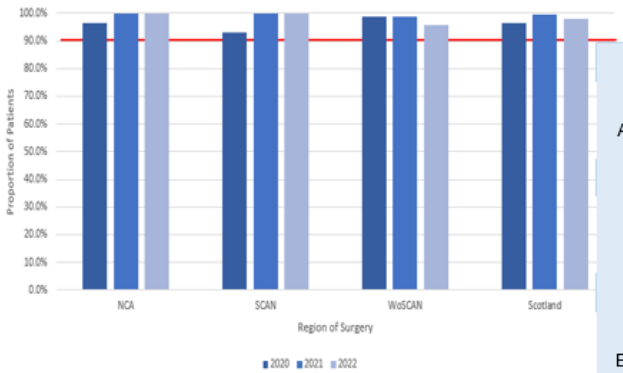

| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Aberdeen | N | 5 | 5 | 5 |
| | D | 18 | 15 | 12 |
| | % | 27.8% | 33.3% | 41.7% |
| Dundee | N | 6 | 7 | 4 |
| | D | 10 | 10 | 8 |
| | % | 60% | 70% | 50% |
| Edinburgh | N | 22 | 31 | 35 |
| | D | 43 | 52 | 69 |
| | % | 51.2% | 59.6% | 50.7% |
| Glasgow | N | 32 | 52 | 46 |
| | D | 70 | 86 | 72 |
| | % | 45.7% | 60.5% | 63.9% |
| Scotland | N | 65 | 95 | 90 |
| | D | 141 | 163 | 161 |
| | % | 46.1% | 58.3% | 55.9% |

# QPI 7: Early Post-operative Imaging

Post-operative imaging is important for a number of reasons; it provides a measurement of surgical performance and helps to determine whether and what type of further treatment is required. It also helps to assess prognosis[1]. Imaging should be carried out within 72 hours to enable reliable assessment of the extent of the resection. MRI is the preferred imaging modality for patients with glioma. After this time, changes in the tumour resection bed confound estimation[1].

| | |
|---|---|
| QPI 7: | Patients with malignant glioma (with enhancing component on pre-operative imaging) undergoing surgical resection should be subject to early post-operative imaging. |
| Description: | Proportion of patients with malignant glioma (with enhancing component on pre-operative imaging) who receive early post-operative imaging with MRI within 3 days (72 hours) of surgical resection. |
| Numerator: | Number of patients with malignant glioma (with enhancing component on pre-operative imaging) undergoing surgical resection receiving MRI within 3 days (72 hours) of surgical resection. |
| Denominator: | All patients with malignant glioma (with enhancing component on pre-operative imaging) undergoing surgical resection. |
| Exclusions: | • Patients who are unable to undergo an MRI scan.<br>• Patients who refuse an MRI scan.<br>• Patients undergoing biopsy only. |
| Target: | 90% |

**Figure 11: Proportion of patients with malignant glioma (with enhancing component on pre-operative imaging) who receive early post-operative imaging with MRI within 3 days (72 hours) of surgical resection, 2020- 2022**




| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| Aberdeen | N | 17 | 15 | 12 |
| | D | 18 | 15 | 12 |
| | % | 94.4% | 100% | 100% |
| Dundee | N | 11 | 9 | 8 |
| | D | 11 | 9 | 8 |
| | % | 100% | 100% | 100% |
| Edinburgh | N | 39 | 52 | 69 |
| | D | 42 | 52 | 69 |
| | % | 92.9% | 100% | 100% |
| Glasgow | N | 69 | 85 | 69 |
| | D | 70 | 86 | 72 |
| | % | 98.6% | 98.8% | 95.8% |
| Scotland | N | 136 | 161 | 158 |
| | D | 141 | 162 | 161 |
| | % | 96.5% | 99.4% | 98.1% |

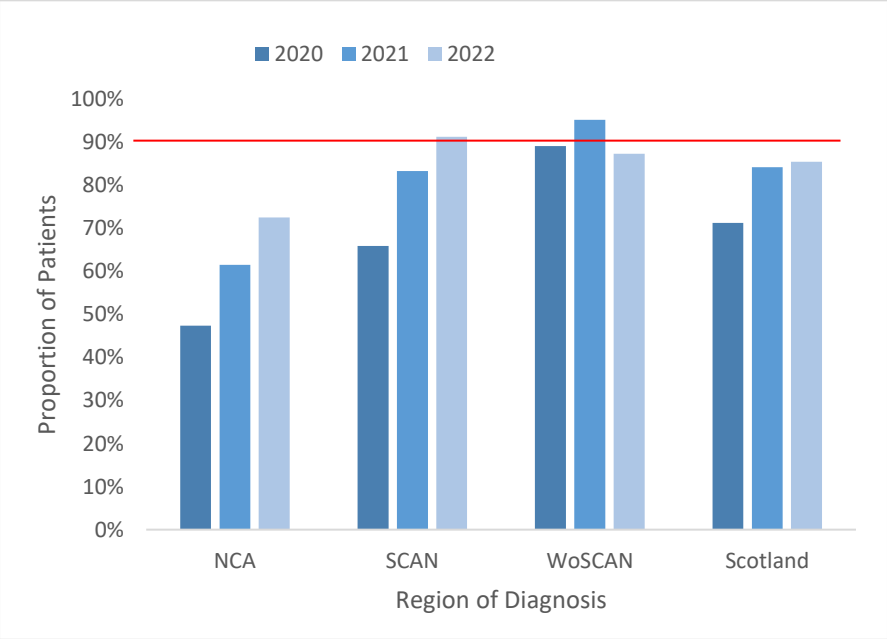
All regions met the 95% target with Aberdeen, Dundee and Edinburgh centres achieving 100%. The overall national performance was 98.1%.

# QPI 9: Access to adjuvant treatment

Evidence demonstrates a negative impact on patient outcome if adjuvant treatment is delayed. It has been reported that by delaying oncological treatment, the risk of death increased by 8.9% for each week from the date of first surgery.[1] In addition, evidence shows that patients commencing radiotherapy within 6 weeks of the date of surgery had improved overall survival. Hence a maximum interval of 6 weeks between surgery and first day of radiotherapy is recommended.[1]

| | |
|---|---|
| QPI 9: | The maximum time between surgical resection and oncological treatment for patients with high grade glioma (WHO Grades III and IV) should be 6 weeks. |
| Description: | Proportion of patients with high grade glioma (WHO Grade III and IV) undergoing surgical resection who commence their oncological treatment (chemotherapy, radiotherapy or chemoradiotherapy) within 6 weeks of surgical resection. |
| Numerator: | Number of patients with high grade glioma (WHO Grades III and IV) who undergo oncological treatment (chemotherapy, radiotherapy or chemoradiotherapy) who commence oncological treatment within 6 weeks of surgery. |
| Denominator: | All patients with high grade glioma (WHO Grades III and IV) who undergo oncological treatment (chemotherapy, radiotherapy or chemoradiotherapy). |
| Exclusions: | None |
| Target: | 90% |

**Figure 13: Proportion of patients with high grade glioma (WHO Grade III and IV) undergoing surgical resection who commence their oncological treatment within 6 weeks of surgery, 2020 – 2022**




| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| NCA | N | 18 | 24 | 29 |
| | D | 38 | 39 | 40 |
| | % | 47.4% | 61.5% | 72.5% |
| SCAN | N | 29 | 50 | 62 |
| | D | 44 | 60 | 68 |
| | % | 65.9% | 83.3% | 91.2% |
| WoSCAN | N | 57 | 80 | 55 |
| | D | 64 | 84 | 63 |
| | % | 89.1% | 95.2% | 87.3% |
| Scotland | N | 104 | 154 | 146 |
| | D | 146 | 183 | 171 |
| | % | 71.2% | 84.2% | 85.4% |

The target reduced to 90% from the 2020 cohort to account for patients who are clinically unfit post-operatively for oncological treatment.

The overall performance was 85.4%, with most Regions showing improvement from the previous year. However, all regions except SCAN failed to meet the 90% target. Performance ranged from 72.5% in NCA to 91.2% in SCAN. MDTs have reviewed cases not meeting the target and provided feedback.

The Aberdeen and Dundee Centres reviewed cases and provided detailed clinical feedback. Despite the headline percentage, Aberdeen performance in this QPI has improved after rescheduling oncology and RT planning slots. Of those patients that missed target the majority were by 48 hours or less and included COVID and adjuvant therapy delays as per guidance at the time.

Dundee has a single-handed practitioner who has no cross-cover and so leave impacts service delivery, but mostly delays are due to waiting for events downstream in the pathway, especially pathology results.

## Action Required:

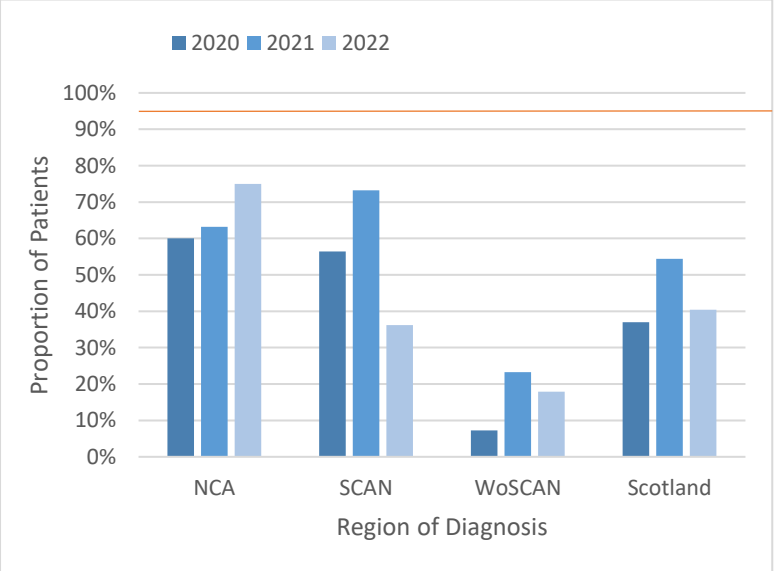
It is anticipated that continued improvements in timelines for pathology reporting and new radiotherapy planning facilities will all contribute to improvements against this performance indicator.

# QPI 11: Seizure Management

The diagnosis of epilepsy is more accurate when made by a medical practitioner who specialises in epilepsy, resulting in better patient outcomes. Access to a nurse with expertise in epilepsy management enhances quality of life for patients and gives a more patient-centred approach to care[1].

| | |
|---|---|
| QPI 11: | Patients with brain/central nervous system (CNS) cancer presenting with seizures at diagnosis should be seen by a neurologist and/or a named epilepsy specialist nurse (ESN). |
| Description: | Proportion of patients with brain/CNS cancer presenting with seizures at diagnosis who are seen by a neurologist or a named ESN within four weeks of diagnosis. |
| Numerator: | Number of patients presenting with seizures at diagnosis seen by a neurologist or a named ESN within four weeks of diagnosis. |
| Denominator: | All brain/CNS cancer patients presenting with seizures at diagnosis. |
| Exclusions: | None. |
| Target: | 95% |

**Figure 15: Proportion of patients with brain/CNS cancer presenting with seizures at diagnosis who are seen by a neurologist or a nurse with expertise in epilepsy management, 2020 - 2022**




| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| NCA | N | 12 | 12 | 18 |
| | D | 20 | 19 | 24 |
| | % | 60.0% | 63.2% | 75% |
| SCAN | N | 22 | 30 | 17 |
| | D | 39 | 41 | 47 |
| | % | 56.4% | 73.2% | 36.2% |
| WoSCAN | N | 3 | 7 | 5 |
| | D | 41 | 30 | 28 |
| | % | 7.3% | 23.3% | 17.9% |
| Scotland | N | 37 | 49 | 40 |
| | D | 100 | 90 | 99 |
| | % | 37.0% | 54.4% | 40.4% |

All Regions failed the 95% target. Performance ranged from 17.9% in WoSCAN to 75% in NCA. The overall national performance was 40.4%.

SCAN reviewed 30 cases that were outliers

- 16 patients were seen outwith 28 days of MDT
- 2 patient appointments were did not attend or cancelled and another appointment was arranged
- 14 patients were not seen by a neurologist or a named ESN
- Of these 14 patients, 8 patients were treated with best supportive care following diagnosis, 2 patients were treated with palliative radiotherapy (1 patient referred to ESN service, but died before the appointment date). 1 patient was referred to ESN services, but has not been seen yet
- One quarter of SCAN patients are treated with best supportive care following diagnosis with deterioration due to disease progression before being seen by neurology or ESN
- SCAN have had a difficulty maintaining this QPI performance as a direct result of the loss of a full-time nurse which was never replaced due to lack of funding and a neurologist who retired. SCAN may have difficulty maintaining this QPI performance given that another full-time nurse will be leaving with need to recruit into that post
- NHS GGC: Of the 23 patients failing the QPI 19 have been seen by a Consultant Neurologist outwith the 4 week period, with 1 patient failing to attend 1st offered appointment. 2 patients referred to Epilepsy service await appointment, 1 with one failing to attend offered appointment. 2 patients have not been referred to Epilepsy services. Lack of resource to offer reviews on all patients presenting with Brain Cancer and seizures

Highland commented that neurosurgery for their patients is performed in Grampian so delays in referral to Neurology for patients presenting with seizures can happen. Waiting times for Neurology appointments is also a factor.

Aberdeen noted that this QPI remains frustrating due to the loose definition of seizure often described at presentation, this is often confused with collapse or weakness which are not seizures. Of the cases missed there were elderly patients under the geriatric team advised for best supportive and palliative care therefore neurology referral felt inappropriate and other cases in ICU and seizures managed with verbal advice from neurology, but limited documentation found as different notes system in use and in other cases attending Neurosurgeon advised.

Of the 23 Patients failing the QPI, 19 have been seen by a Consultant Neurologist outwith the 4-week period, (one failed to attend 1st offered appointment). Two patients referred to Epilepsy service await appointment, (1 failed to attend appointment). 2 patients have not been referred to Epilepsy services. Lack of resource to offer reviews on all patients presenting with Brain Cancer and seizures.

## Action:

- Glasgow to develop resource with Epilepsy Neurology Consultants and Epilepsy Nurses to ensure the longer-term sustainability of the service

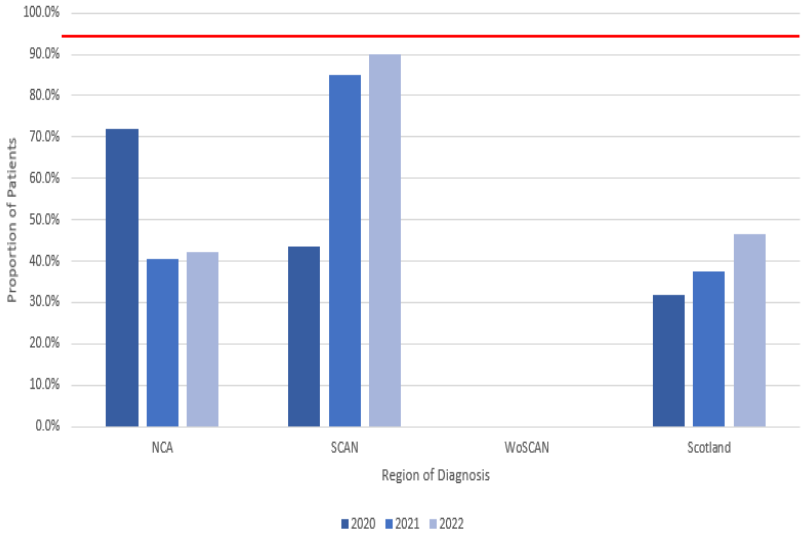
# QPI 12: Key Worker

It is recommended that all patients with CNS tumours should have an identified key worker. Having a clearly identified key worker is important to ensure that care is adequately coordinated for patients with CNS tumours. While the patient is being managed under the care of the neuroscience or oncology/radiotherapy centre the key worker is likely to be the Clinical Nurse Specialist (CNS).

Supportive care patients have been excluded from this QPI as they are managed separately through a palliative care route.

| | |
|---|---|
| QPI 12 : | Patients with brain/CNS cancer should have an identified key worker to coordinate care across the patient pathway. |
| Description: | Proportion of patients with brain/CNS cancer who have an identified key worker by the first MDT meeting. |
| Numerator: | Number of patients with brain/CNS cancer who have an identified key worker by the first MDT meeting. |
| Denominator: | All patients with brain/CNS cancer. |
| Exclusions: | • Patients undergoing supportive care. |
| Target: | 95% |

**Figure 16: Proportion of patients with brain/CNS cancer who have an identified key worker by the first MDT meeting, 2020 – 2022**




| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| NCA | N | 44 | 26 | 30 |
| | D | 61 | 64 | 71 |
| | % | 72.1% | 40.6% | 42.3% |
| SCAN | N | 37 | 79 | 100 |
| | D | 85 | 93 | 111 |
| | % | 43.5% | 84.9% | 90.1% |
| WoSCAN | N | 0 | 0 | 0 |
| | D | 109 | 124 | 98 |
| | % | 0% | 0% | 0% |
| Scotland | N | 81 | 105 | 130 |
| | D | 255 | 281 | 280 |
| | % | 31.8% | 37.4% | 46.4% |

No centre met the 95% target with performance ranging from 0% in WoSCAN to 90.1% in SCAN. The overall national performance was 46.4%, an improvement in comparison to previous years.

Aberdeen note that this appears to be an anomaly this year due to a change in MDT co-ordinator, previously this has been over 95%. This should now be rectified going forward, the patients did have a key worker assigned at the 2nd MDT meeting when the pathology was known.

All patients in Inverness have the same Key worker / team and Highland have been asking for this to be added to all MDT outcome forms for some time now. Direct communication with the new MDT coordinator has obtained agreement to amend how they name the Specialist Nurse going forward.

Dundee report that they need resources to fund a Neurosurgical specialist nurse to fulfil this role.

Glasgow commented that their review identified key worker had not been documented for any of the 98 patients. The current definition that a Key Worker be identified by the first MDT is unlikely to be achievable in a regional service like neuro-oncology. The key worker is dependent on the individual patient outcome following MDT discussion and or follow-up appointments with relevant consultants, as definitive pathological diagnosis is made at surgery. Patients are required to be discussed before their operation (as per QPI2) at which point they can often be in another hospital and/or health board.

Glasgow commented that key worker allocation at first MDT discussion when definitive diagnosis is not yet known is inappropriate for pathway and plans to highlight this at the formal review.  Section for recording of key worker identification to be added to MDT proforma.

The Edinburgh MDT noted that the tick box added to MDM forms to record the Key worker at the time of the MDM has led to further significant improvement of the identification of a key worker for the 2022 cohort. SCAN will continue to ensure that key worker is consistently recorded for all eligible patients at time of MDT discussion.

## Action Required:

The Aberdeen and Inverness Centre to address documentation issues

NHS GGC to confirm plans to recruit additional resource to support this service and ensure that MDT proforma is updated and populated at the MDT

# QPI 13: 30 Day Mortality after Treatment for Brain/CNS Cancer

Treatment related mortality is a marker of the quality and safety of the whole service provided by the MDT. Outcomes of treatment, including treatment related morbidity and mortality should be regularly assessed.

Treatment should only be undertaken in individuals that may benefit from that treatment. This QPI is intended to ensure that treatment is given appropriately, and the outcome reported on and reviewed.

| | |
|---|---|
| QPI 13: | 30 day mortality following treatment for brain/CNS cancer. |
| Description: | Proportion of patients with brain/CNS cancer who die within 30 days of treatment (surgery, radiotherapy and chemotherapy) for brain/CNS cancer. |
| Numerator: | Number of patients with brain/CNS cancer who undergo treatment that die within 30 days of treatment. |
| Denominator: | All patients with brain/CNS cancer who undergo treatment.<br>(i) Surgery<br>(ii) Chemoradiotherapy<br>(iii) Radiotherapy |
| Exclusions: | No exclusions |
| Target: | <5% |

**Table 5: Proportion of patients with brain/CNS cancer who die within 30 days of surgery, 2020 – 2022**

| | Aberdeen | | | Dundee | | | Edinburgh | | | Glasgow | | | Scotland | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | D | % | N | D | % | N | D | % | N | D | % | N | D | % |
| 2022 | 3 | 62 | 4.8% | 0 | 26 | 0% | 1 | 102 | 1% | 3 | 107 | 2.8% | 7 | 271 | 2.6% |
| 2021 | 2 | 46 | 4.3% | 0 | 26 | 0% | 1 | 70 | 1.4% | 3 | 127 | 2.4% | 6 | 269 | 2.2% |
| 2020 | 2 | 38 | 5.3% | 0 | 17 | 0% | 4 | 74 | 5.4% | 1 | 113 | 0.9% | 7 | 242 | 2.9% |

The Aberdeen Centre reviewed 2 patients who died within 30 days of surgery. Unfortunately, both were younger patients who had rapidly progressive severe neurological deterioration prior to surgery. In both cases once the pathology was known the high-grade glioma was confirmed and massive tumour progression was seen within 3 weeks of surgery and PS did not allow any further adjuvant treatment. Surgery was pursued in both cases due to younger age and possibility of alternative diagnosis.

The Edinburgh Centre noted that 1 patient died within 15 days after surgery for a multifocal high-grade glioma with extensive leptomeningeal disease. An open biopsy was planned, but had a partial debulking due to initial difficulty controlling haemostasis. No action needed.

**Table 6: Proportion of patients with brain/CNS cancer who die within 30 days of chemoradiotherapy, 2020 – 2022**

| | NCA | | | SCAN | | | WoSCAN | | | Scotland | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | D | % | N | D | % | N | D | % | N | D | % |
| 2022 | 2 | 34 | 5.9% | 0 | 37 | 0% | 1 | 45 | 2.2% | 3 | 116 | 2.6% |
| 2021 | 1 | 26 | 3.8% | 1 | 39 | 2.6% | 4 | 69 | 5.8% | 6 | 134 | 4.5% |
| 2020 | 0 | 30 | 0% | 1 | 23 | 4.3% | 0 | 43 | 0% | 1 | 96 | 1% |

The overall national performance was 2.6%. All Regions except NCA were within the <5% target, with performance ranging from 0% in SCAN to 5.9% in NCA.

The Aberdeen Centre reviewed the single case who died 26 days after completing RT again due to rapid tumour progression of an unmethylated GBM. No oncology complications noted.

The Glasgow Centre did not provide comment on their single case.

**Table 7: Proportion of patients with brain/CNS cancer who die within 30 days of radiotherapy, 2020 – 2022**

| | NCA | | | SCAN | | | WoSCAN | | | Scotland | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | D | % | N | D | % | N | D | % | N | D | % |
| 2022 | 1 | 9 | 11.1% | 2 | 56 | 3.6% | 0 | 33 | 0% | 3 | 98 | 3.1% |
| 2021 | 1 | 13 | 7.7% | 6 | 42 | 14.3% | 1 | 27 | 3.7% | 8 | 82 | 9.8% |
| 2020 | 0 | 14 | 0% | 2 | 48 | 4.2% | 1 | 32 | 3.1% | 3 | 94 | 3.2% |

(-) Data is not shown; denominator less than 5. (*) denotes a zero.

Overall national performance was 3.1%, again achieving the <5% target comfortably. SCAN and WoSCAN met the target and performance ranged from 0% in WoSCAN to 11.1% in NCA.

The Edinburgh Centre clinically reviewed 2 cases who died within 30 days of radiotherapy (2 and 8 days). One patient died of disease progression and 1 patient died of pneumonia. Both were treated appropriately and death was not treatment-related.

Aberdeen clinically reviewed the 2 patients who died within 30 days of treatment. Unfortunately, both younger patients who had rapidly progressive severe neurological deterioration prior to surgery. In both cases, once the pathology was known, the high-grade glioma was confirmed. Massive tumour progression was seen within 3 weeks of surgery and PS did not allow any further adjuvant treatment. Surgery was pursued in both cases due to younger age and possibility of alternative diagnosis. Both patients died due to tumour progression with no oncological complications.

# Acknowledgement

This report has been prepared using clinical audit data provided by each of the fourteen NHS Boards in Scotland. We would like to thank colleagues in the clinical effectiveness departments throughout Scotland for gathering, submitting and verifying these data.

We would also like to thank the clinicians, nurses and others involved in the management of brain and CNS cancers for their contribution to the clinical audit process.

# Abbreviations

| | |
|---|---|
| **AA** | NHS Ayrshire & Arran |
| **BWoSCC** | Beatson West of Scotland Cancer Centre |
| **CEL** | Chief Executive Letter |
| **CNS** | Central Nervous System |
| **CT** | Computed Tomography |
| **D&G** | NHS Dumfries & Galloway |
| **eCASE** | Electronic Cancer Audit Support Environment |
| **FV** | NHS Forth Valley |
| **GGC** | NHS Greater Glasgow and Clyde |
| **HIS** | Healthcare Improvement Scotland |
| **KPS** | Karnofsky Performance Status |
| **MCN** | Managed Clinical Network |
| **MDT** | Multidisciplinary Team |
| **MGMT** | O6-methylguanine-DNA methyltransferase |
| **MRI** | Magnetic Resonance Imaging |
| **NCA** | North Cancer Alliance |
| **NCQSG** | National Cancer Quality Steering Group |
| **NMCN** | National Managed Clinical Network |
| **PHS** | Public Health Scotland |
| **QPI(s)** | Quality Performance Indicator(s) |
| **RCAG** | Regional Cancer Advisory Group |
| **SANON** | Scottish Adult Neuro-Oncology Network |
| **SCAN** | South-East of Scotland Cancer Network |
| **WHO** | World Health Organisation |
| **WoS** | West of Scotland |
| **WoSCAN** | West of Scotland Cancer Network |

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# Appendix 1: Meta Data

| | |
|---|---|
| Report Title | Cancer Audit Report: Brain and Central Nervous System Cancers Quality Performance Indicators |
| Time Period | Patients diagnosed between 01 January 2022 to 31 December 2022 |
| Data Source | Cancer Audit Support Environment (eCASE). A secure centralised web-based database which holds cancer audit information in Scotland. |
| Data extraction date | The data contained within this report was extracted from eCASE at 1000 hrs on 22/05/2023. |
| Methodology | Analysis was performed centrally by NSS Information Management Service. The timescales agreed took into account the patient pathway to ensure that a complete treatment record was available for the majority of patients.<br><br>Initial results were provided to Health Boards to check for inaccuracies, inconsistencies or obvious gaps and a subsequent download taken upon which final analysis was carried out.<br><br>The final data analysis was disseminated for NHS Board & Region verification in line with the regional audit governance process to ensure that the data was an accurate representation of service in each area. |
| Data Quality | Audit data completeness can be assessed by estimating the proportion of expected patients that have been identified through audit compared to the number reported by the National Cancer Registry (provided by PHS). This is known as case ascertainment. Figures should only be used as a guide as it is not possible to compare the same cohort from each data source. Note that a 5-year average is taken for cancer registry cases to take account of annual fluctuations in incidence within regions. |

| | NCA | SCAN | WoSCAN | Scotland |
|---|---|---|---|---|
| Cases from audit | 110 | 162 | 143 | 415 |
| Cases from ISD (2016-2020)* | 119 | 139 | 164 | 422 |
| Case ascertainment | 92.4% | 116.5% | 87.2% | 98.3% |