**North, South East and West of Scotland Cancer Networks**

**HepatoPancreatoBiliary Cancers National Managed Clinical Network**

# Audit Report

## Report of the 2014 Clinical Audit Data


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## Executive Summary

### Introduction

The purpose of this report is to present an assessment of performance of HepatoPancreatoBiliary (HPB) Cancer Services relating to patients diagnosed across Scotland during 2014 through clinical audit data. Results are measured against the HPB Cancer Quality Performance Indicators[1] (QPIs) which were implemented for patients diagnosed on or after 1st January 2014.

The National Cancer Quality Steering Group (NCQSG) completed a programme of work to develop national QPIs for all cancer types to enable national comparative reporting and drive continuous improvement for patients in 2014. In collaboration with the NMCN for HPB Cancers and Information Services Division (ISD) the HPB Cancer QPIs[1] were published by Healthcare Improvement Scotland (HIS) in August 2012 and implemented for patients diagnosed on or after 1st January 2013. Data definitions and measurability criteria to accompany the HPB Cancer QPIs are available from the ISD website[2].

Twelve months of data were measured against the HPB Cancer QPIs for the second consecutive year, and Year 1 and Year 2 results are presented within this audit report for QPIs where results have remained comparable. Following reporting of year 1 data a process of baseline review was undertaken to ensure QPIs were fit for purpose and truly driving quality improvement in patient care. Future reports will continue to compare clinical audit data in successive years to further illustrate trends.

### Background

HPB cancers are a rare group of cancers. In 2014 the audit identified 1418 patients diagnosed with a new primary cancer of the liver, pancreas, bile ducts, gallbladder or duodenum in Scotland, of which pancreatic cancer is the largest single group accounting for 656 cases. Survival rates for pancreatic cancer remain poor and it was the sixth most common cause of death from cancer in Scotland in 2014[6]. The incidence of liver cancer is increasing[4] and mortality has significantly increased in both sexes over the past 10 years. Although the percentage frequency of liver cancer remains relatively low at 1.8% of all cancers, it is now the seventh most common cause of death from cancer in Scotland[5].

The table below details the five centres carrying out HPB cancer treatment in Scotland. These are considered the centres for specialist treatment, which includes surgery, systemic anti cancer therapy (SACT) and radiotherapy. Patients may receive diagnostic and palliative care in their local hospital where appropriate, however the majority of patients are referred to one of the five centres for specialist management. Additionally, the Scottish Liver Transplant Unit (SLTU), located in the Royal Infirmary of Edinburgh, is responsible for management of all liver transplant cases in Scotland, a treatment which can be indicated for some patients with primary liver cancer.

| Centre | Constituent Hospital(s) |
|---|---|
| Aberdeen | Aberdeen Royal Infirmary (ARI) |
| Dundee | Ninewells Hospital (NW) |
| Edinburgh | Royal Infirmary of Edinburgh (RIE - surgery) and<br>Western General Hospital (WGH - oncology) |
| Glasgow | Glasgow Royal Infirmary (GRI - surgery) and<br>Beatson West of Scotland Cancer Centre (BWoSCC - oncology) |
| Inverness | Raigmore Hospital |

## Methodology

The clinical audit data presented in this report was collected by clinical audit staff in each NHS Board in accordance with an agreed dataset and definitions. The data was entered locally into the electronic Cancer Audit Support Environment (eCASE): a secure centralised web-based database. Data relating to patients diagnosed between 1st January 2014 and 31st December 2014 was downloaded from eCASE on 19th August 2015.

Analysis was performed centrally by the West of Scotland Cancer Network (WoSCAN) Information Team and the timescales agreed took into account the patient pathway to ensure that a complete treatment record was available for each case. Initial results of the analysis were provided to local Boards to check for inaccuracies or obvious gaps before final analysis was carried out. Final results were disseminated for NHS Board verification in line with the regional audit governance process, to ensure that the data was an accurate representation of service in each area.

Once all NHS Boards had been given the opportunity to verify their data, further analyses were carried out at a regional and national level to provide an overall assessment of the quality of HPB cancer services in Scotland.

## Results

The overall estimated case ascertainment across Scotland is 101% which indicates excellent data capture for 2014. Data quality has improved in recent years and stage of disease is one of the areas where an improvement in data capture is evident.

Results for each QPI are shown in detail in the main report and illustrate NHS Board/Regional performance against each target and overall national performance for each performance indicator. Results are presented graphically and the accompanying tabular format also highlights any missing data and its possible effect on any of the measured outcomes.

The summary of results on the following page shows the national percentage performance against each QPI target and performance by NHS Region or treatment centre.

## Summary of QPI Results

| Colour Key | | Symbol Key | |
|---|---|---|---|
| | Above QPI target | > | Indicates increase on previous year's figure |
| | Below QPI target | < | Indicates decrease from previous year's figure |
| | | = | Indicates no change from previous year |
| | | | Indicates no comparable measure from previous year |

| Quality Performance Indicator (QPI) | Performance by NHS Board of diagnosis | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | QPI target | NOSCAN | | SCAN | | WoSCAN | | Scotland | |
| ***Section 1: Analysed by Board of diagnosis (QPIs 1 – 4, 6, 7 and 9)*** | | | | | | | | | |
| QPI 1: Patients with newly diagnosed HPB cancer should be discussed by a multidisciplinary team prior to definitive treatment. | **95%** | **93.9%** | | **84.3%** | | **86.4%** | | **87.5%** | |
| | | 309 | 329 | 307 | 364 | 546 | 632 | 1160 | 1325 |
| QPI 2: Patients with Hepatocellular Carcinoma (HCC) should be appropriately diagnosed and staged. | **90%** | **> 47.1%** | | **> 26.7%** | | **> 40.4%** | | **> 37.6%** | |
| | | 32 | 68 | 28 | 105 | 72 | 178 | 132 | 351 |
| *QPI 3: Patients with early Hepatocellular Carcinoma (HCC) should be referred for consideration of liver transplantation. | **90%** | **> 55.6%** | | **> 100%** | | **< 64.9%** | | **< 73.9%** | |
| | | 5 | 9 | 26 | 26 | 37 | 57 | 68 | 92 |
| *QPI 4: Patients with Hepatocellular Carcinoma (HCC) who are not suitable for curative treatment should receive palliative treatment. | **40%** | **> 35.1%** | | **> 39.0%** | | **< 27.3%** | | **> 30.6%** | |
| | | 13 | 50 | 30 | 77 | 33 | 121 | 76 | 248 |
| *QPI 6: Patients with pancreatic, duodenal or biliary tract cancers should undergo a computerised tomography (CT) of the chest, abdomen and pelvis to evaluate the extent of disease. | **80%** | **> 68.7%** | | **> 77.2%** | | **> 83.2%** | | **> 78.5%** | |
| | | 79 | 115 | 78 | 101 | 223 | 268 | 380 | 484 |
| *QPI 7: Patients with pancreatic, duodenal or biliary tract cancers having non-surgical treatment should have a cytological or histological diagnosis. | **50%** | **> 81.1%** | | **< 78.9%** | | **> 89.0%** | | **> 85.7%** | |
| | | 30 | 37 | 15 | 19 | 81 | 91 | 126 | 147 |
| *QPI 9: Patients with localised pancreatic, distal biliary tract or duodenal cancer should have surgical resection. | **15%** | **> 13.9%** | | **> 11.5%** | | **> 12.2%** | | **> 12.6%** | |
| | | 32 | 230 | 23 | 200 | 47 | 385 | 103 | 816 |

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

| Quality Performance Indicator (QPI) | Performance by treatment centre | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QPI target | Aberdeen | | Inverness | | Dundee | | Edinburgh | | Glasgow | | Other | | Scotland | |
| ***Section 2: Analysed by Board of treatment (QPIs 5a – 5e, 8, 10, 11 and 12)*** | | | | | | | | | | | | | | | |
| QPI 5a: 30 day mortality following treatment for Hepatocellular Carcinoma (HCC) with curative intent: Liver Transplant | **< 10%** | **NA** | | **NA** | | **NA** | | **0.0%** | | **NA** | | **NA** | | **= 0.0%** | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 17 |
| QPI 5a: 90 day mortality following treatment for Hepatocellular Carcinoma (HCC) with curative intent: Liver Transplant | **< 10%** | **NA** | | **NA** | | **NA** | | **0.0%** | | **NA** | | **NA** | | **0.0%** | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 17 |
| *QPI 5b: 30 day mortality following treatment for Hepatocellular Carcinoma (HCC) with curative intent: Resection | **< 10%** | **20.0%** | | **-** | | **NA** | | **0.0%** | | **-** | | **NA** | | **> 4.2%** | |
| | | 1 | 5 | - | - | 0 | 0 | 0 | 17 | - | - | 0 | 0 | 1 | 24 |
| *QPI 5b: 90 day mortality following treatment for Hepatocellular Carcinoma (HCC) with curative intent: Resection | **< 10%** | **20.0%** | | **-** | | **NA** | | **0.0%** | | **-** | | **NA** | | **4.2%** | |
| | | 1 | 5 | - | - | 0 | 0 | 0 | 17 | - | - | 0 | 0 | 1 | 24 |
| *QPI 5c: 30 day mortality following treatment for Hepatocellular Carcinoma (HCC) with curative intent: Ablation | **< 10%** | **NA** | | **NA** | | **-** | | **0.0%** | | **0.0%** | | **NA** | | **= 0.0%** | |
| | | 0 | 0 | 0 | 0 | - | - | 0 | 8 | 0 | 9 | 0 | 0 | 0 | 18 |
| *QPI 5c: 90 day mortality following treatment for Hepatocellular Carcinoma (HCC) with curative intent: Ablation | **< 10%** | **NA** | | **NA** | | **-** | | **0.0%** | | **25.0%** | | **NA** | | **11.8%** | |
| | | 0 | 0 | 0 | 0 | - | - | 0 | 8 | 2 | 8 | 0 | 0 | 2 | 17 |
| *QPI 5d: 30 day mortality following treatment for Hepatocellular Carcinoma (HCC) with palliative intent: TACE | **< 10%** | **-** | | **-** | | **-** | | **0.0%** | | **0.0%** | | **0.0%** | | **> 0.0%** | |
| | | - | - | - | - | - | - | 0 | 48 | 0 | 28 | - | - | 0 | 88 |
| *QPI 5e: 30 day mortality following treatment for Hepatocellular Carcinoma (HCC) with palliative intent: SACT | **< 10%** | **NA** | | **NA** | | **-** | | **-** | | **10.0%** | | **-** | | **> 5.9%** | |
| | | 0 | 0 | 0 | 0 | - | - | - | - | 1 | 10 | - | - | 1 | 17 |
| *QPI 8: Patients undergoing resection for pancreatic cancer should receive adjuvant chemotherapy, where appropriate. | **50%** | **41.7%** | | **-** | | **-** | | **56.3%** | | **50.0%** | | **NA** | | **< 45.0%** | |
| | | 5 | 12 | - | - | - | - | 9 | 16 | 13 | 26 | 0 | 0 | 27 | 60 |

| Quality Performance Indicator (QPI) | Performance by treatment centre | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QPI target | Aberdeen | | Inverness | | Dundee | | Edinburgh | | Glasgow | | Other | | Scotland | |
| *QPI 10: In patients undergoing surgery for pancreatic cancer the number of lymph nodes examined should be maximised (≥ 15 lymph nodes). | 100% | 41.7% | | 83.3% | | 62.5% | | 72.0% | | 84.8% | | NA | | < 72.6% | |
| | | 5 | 12 | 5 | 6 | 5 | 8 | 18 | 25 | 28 | 33 | 0 | 0 | 61 | 84 |
| *QPI 11a: 30-day mortality after surgery with curative intent for pancreatic, duodenal or distal biliary tract cancer. | < 5% | 0.0% | | 14.3% | | 0.0% | | 0.0% | | 2.6% | | NA | | > 2.0% | |
| | | 0 | 16 | 1 | 7 | 0 | 9 | 0 | 29 | 1 | 38 | 0 | 0 | 2 | 99 |
| *QPI 11b: 90-day mortality after surgery with curative intent for pancreatic, duodenal or distal biliary tract cancer. | < 5% | 0.0% | | 28.6% | | 0.0% | | 0.0% | | 2.6% | | NA | | > 3.1% | |
| | | 0 | 15 | 2 | 7 | 0 | 9 | 0 | 29 | 1 | 38 | 0 | 0 | 3 | 98 |
| QPI 12a: Pancreatic resectional surgery should be performed in hospitals where there is an appropriate annual volume of such cases. | 11 per centre per year | 16 | | 7 | | 9 | | 28 | | 39 | | NA | | 99 | |

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

- Data not shown due to small numbers.

**Conclusions and Action Required**

The development of national QPIs for HPB cancer has helped drive continuous quality improvement in the care of patients with HPB cancer whilst ensuring that activity at NHS Board/treatment centre level is focussed on those areas that are most important in terms of improving survival and patient outcomes. Results presented in this and previous reports demonstrate that patients with HPB cancer receive an equitable and consistent standard of care across NHS Scotland, however it is evident that many of the QPI targets set have been challenging for NHS Boards to achieve and a number of areas for improvement have been highlighted.

This audit report has identified areas where data capture must improve to enable more meaningful analysis of performance against QPIs, specifically with regards to the number of lesions detected radiologically and Child Pugh score for patients with hepatocellular carcinoma (HCC). Case ascertainment and data capture is however of a high standard overall and it is evident that many NHS Boards have already initiated changes to improve data recording.

Areas for service improvement have been identified relating to variation in palliative treatment rates, resection rates, lymph node yield following resection and volumes of surgical resections per centre and surgeon.

The NMCN will actively take forward national actions identified and NHS Boards are asked to develop local Action/Improvement Plans in response to the findings presented in the report.

**Action Required:**

- Lothian, Fife, Borders, Dumfries & Galloway and GGC to review patients who were not discussed at an MDT meeting to ensure that this was appropriate and review pathways if required
- NHS Lothian to review regional MDT referral forms again to ascertain whether further amendments could be made to improve available information for patients with HCC.
- NHS GGC to review cases which did not meet the target for diagnosis and staging of HCC and provide feedback to the NMCN, noting actions required where appropriate.
- NHS GGC to review cases which were not referred to SLTU and provide feedback to the NMCN, detailing action to be taken where appropriate.
- NHS Borders to review cases where information is not recorded regarding listing criteria for liver transplant to ensure patients who should be included in the denominator are being included.
- NHS GGC, Tayside, Grampian and all SCAN Boards to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN.
- NHS Grampian to review and discuss local diagnostic pathway for pancreatic, duodenal and biliary tract cancers.
- NHS Dumfries & Galloway to review the cases who did not have a histological diagnosis and provide feedback to the NMCN.
- NHS Tayside to review cases which did not receive adjuvant chemotherapy and provide feedback to the NMCN.
- NHS Highland and Tayside to review cases where surgical resection was not undertaken and feedback to NMCN on results.
- Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team.
- SCAN and NOSCAN data from the last 3 years to be reviewed locally to assess the average numbers of resections being carried out per surgeon and feedback results to NMCN.

A summary of actions for each NHS Board has been included within the Action Plan templates in Appendix 2.

**Completed Action Plans should be returned to WoSCAN within two months of publication of this report.**

Progress against these plans will be monitored by the NMCN Advisory Board and any service or clinical issue which the Advisory Board considers not to have been adequately addressed will be escalated to the NHS Board Territorial Lead Cancer Clinician and National Lead Cancer Clinician.

Additionally, progress will be reported to the Regional Cancer Advisory Groups (RCAGs) annually by NHS Board Territorial Lead Cancer Clinicians and NMCN Clinical Lead, as part of the regional audit governance process to enable RCAGs to review and monitor regional improvement.

## 1. Introduction

The National Managed Clinical Network (NMCN) for HepatoPancreatoBiliary (HPB) Cancers launched in 2005 with the aim of providing quality and equitable care for all patients in Scotland. The purpose of this report is to present an assessment of performance of HPB Cancer Services relating to patients diagnosed across Scotland during 2014 through clinical audit data. These audit data underpin much of the regional and national service improvement and development work of the NMCN. Regular reporting of activity and performance is a fundamental requirement of an MCN to assure the quality of care delivered across the country.

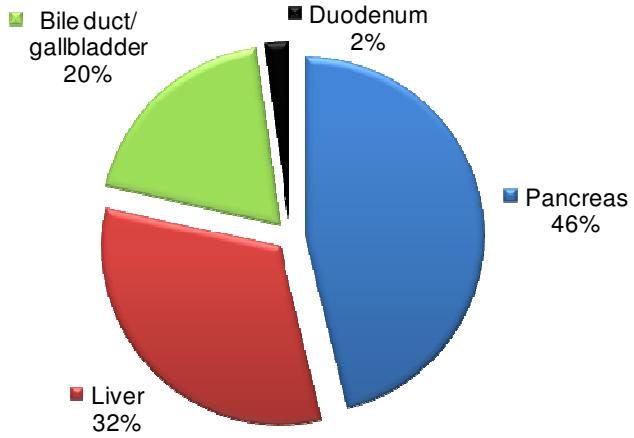
The National Cancer Quality Steering Group (NCQSG) completed a programme of work to develop national QPIs for all cancer types to enable national comparative reporting and drive continuous improvement for patients in 2014. In collaboration with the NMCN for HPB Cancers and Information Services Division (ISD) the HPB Cancer QPIs[1] were published by Healthcare Improvement Scotland (HIS) in August 2012 and implemented for patients diagnosed on or after 1st January 2013. Data definitions and measurability criteria to accompany the HPB Cancer QPIs are available from the ISD website[2].

Twelve months of data were measured against the HPB Cancer QPIs for the second consecutive year, and Year 1 and Year 2 results are presented within this audit report for QPIs where results have remained comparable. Following reporting of year 1 data a process of baseline review was undertaken to ensure QPIs were fit for purpose and truly driving quality improvement in patient care. Future reports will continue to compare clinical audit data in successive years to further illustrate trends.

## 2. Background

HPB cancers are a rare group of cancers. In 2014 the audit identified 1418 patients diagnosed with a new primary cancer of the liver, pancreas, bile ducts, gallbladder or duodenum in Scotland. Pancreatic cancer accounts for almost half of all HPB cancer diagnoses (46.3%) and Figure 1 illustrates the proportions of each type of HPB cancer diagnosed in Scotland in 2014. The proportion of patients diagnosed with HPB cancer by site of origin had remained largely unchanged since 2010.

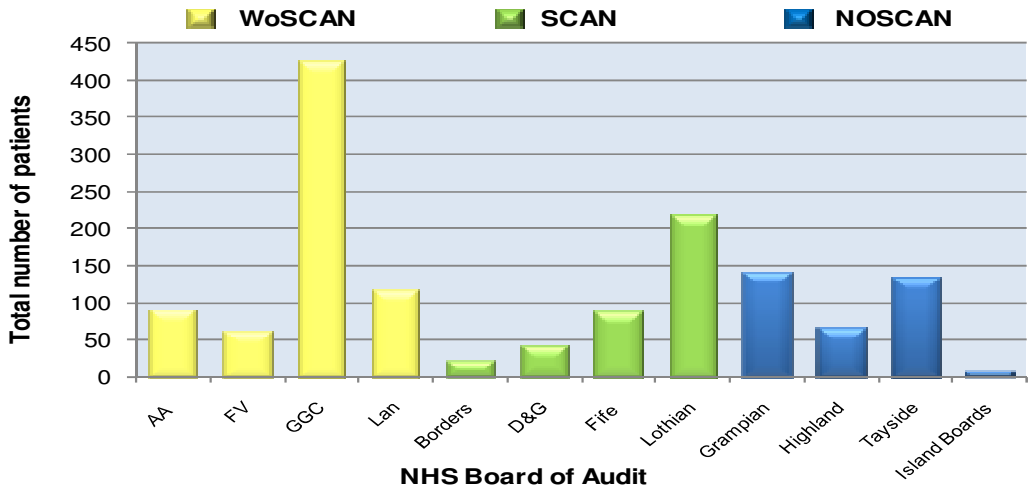
**Figure 1: Proportion of patients diagnosed in 2014 with HPB cancer by site of origin of tumour**




| Site of tumour | Pancreas | Liver | Bile duct/ gallbladder | Duodenum | Total |
|---|---|---|---|---|---|
| Number of cases | 656 | 457 | 274 | 31 | 1418 |

The distribution of the 1418 patients diagnosed in 2014 across the fourteen Scottish NHS Boards is presented in Figure 2. The West of Scotland Cancer Network (WoSCAN) is the most populous area in Scotland and therefore, with 695 patients diagnosed in 2014, is the largest of the three Regional Cancer Networks in Scotland. This represents 49% of the total number of cases in Scotland. NHS Greater Glasgow and Clyde diagnosed the greatest number of patients, followed by NHS Lothian. This reflects the population distribution in Scotland where these are the two largest NHS Boards[3].

**Figure 2: Number of patients diagnosed with HPB cancer across Scotland by NHS Board in 2014**




| **WoSCAN** | AA | FV | GGC | Lanarkshire | Total |
|---|---|---|---|---|---|
| Number of cases | 90 | 63 | 425 | 117 | 695 |
| **SCAN** | Borders | D&G | Fife | Lothian | Total |
| Number of cases | 23 | 42 | 88 | 220 | 373 |
| **NOSCAN** | Grampian | Highland | Tayside | Island Boards[a] | Total |
| Number of cases | 140 | 67 | 135 | 8 | 350 |

Table 1 details the five HPB cancer centres in Scotland. These are considered the centres for specialist treatment, which includes surgery, chemotherapy and radiotherapy. Patients may receive diagnostic and palliative care elsewhere, usually in their local hospital, however most patients are referred to one of the five centres for specialist management. Additionally, the Scottish Liver Transplant Unit (SLTU) is located in the Royal Infirmary of Edinburgh where all liver transplant cases in Scotland are referred, this being one of the treatment options in the management of patients with primary liver cancer.

**Table 1: Specialist centres for treatment of patients diagnosed with HPB cancer in Scotland**

| Centre | Constituent Hospital(s) |
|---|---|
| Aberdeen | Aberdeen Royal Infirmary (ARI) |
| Dundee | Ninewells Hospital (NW) |
| Edinburgh | Royal Infirmary of Edinburgh (RIE - surgery) and<br>Western General Hospital (WGH - oncology) |
| Glasgow | Glasgow Royal Infirmary (GRI - surgery) and<br>Beatson West of Scotland Cancer Centre (BWoSCC - oncology) |
| Inverness | Raigmore Hospital |

In Scotland, liver cancer is the eleventh most common cancer in males and eighteenth in females[4]. The incidence of liver cancer is rising and the last decade has seen the overall incidence of liver cancer increase by 56.6% in Scotland[4]. This rise is particularly reflected in the male population with

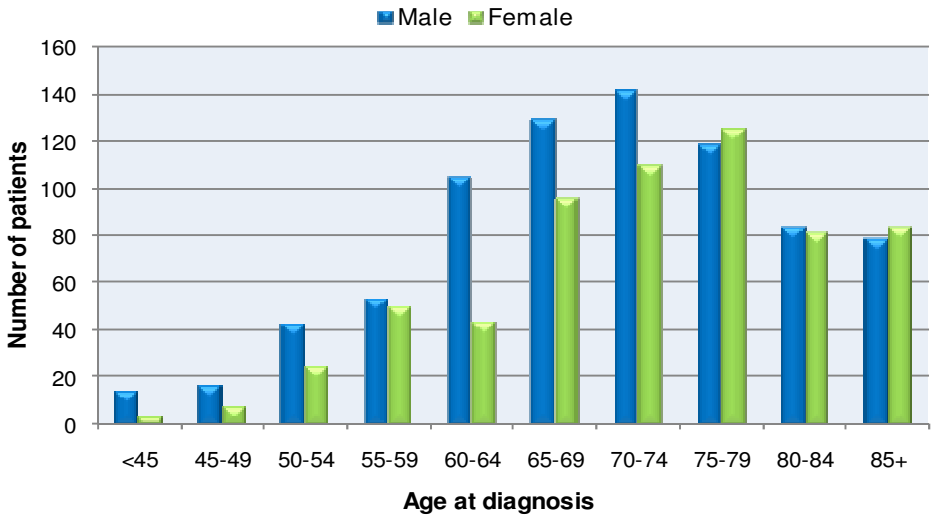
[a] Island NHS Boards include NHS Orkney, NHS Shetland and NHS Western Isles. No patients were diagnosed with HPB cancer within NHS Orkney in 2014.

increases in incidence of 66.7% and 32.7% in males and females respectively in the last decade[4]. The percentage frequency of liver cancer is however relatively low at 1.8% of all cancer types diagnosed[4]. There has been an overall rise in mortality rates for cancer of the liver over the past ten years of 43%, showing a statistically significant increase in both males and females[5]. Liver cancer is now ranked as the seventh most common cause of death from cancer in 2014, and the 10-year percentage change in mortality rates show significant increases of 42.4% and 44.2% for males and females respectively[5].

Pancreatic cancer is the twelfth most common cancer in males and ninth in females [6]. The increase in incidence from 2003 to 2013 is significant in both males and females[5] at 13.4% and 8.6% respectively[6]. Whilst pancreatic cancer is relatively rare (accounting for 2.5% of all cancers), it remains the sixth most common cause of death from cancer in Scotland[6]. Pancreatic cancers tend to present at an advanced stage and are less amenable to treatment, resultantly, survival is poor. There has been a slight improvement in the 1-year relative (age-standardised) survival in the last twenty years however survival rates remain low at 17.7% in males and 17.1% in females[7]. There has been no recorded improvement in 5-year survival for pancreatic cancer over the past two decades and 5-year relative survival is 3.3% in males and 5.5% in females[7].

HPB cancers occur most frequently later in life. Figure 3 illustrates the number of new cases in 2014 by age and sex. The incidence of HPB cancers is higher in males in all but two age groups. As women live longer than men, the total number of cases diagnosed in women aged 85 years or more is greater than for males. Although the majority of cases do occur in older individuals for both sexes, it is noted that a quarter of HPB cancers were diagnosed in individuals under the age of 65 years (25.8%).

**Figure 3: Number of patients diagnosed with HPB cancer in Scotland in 2014 by age group and sex**




| | <45 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70-74 | 75-79 | 80-84 | 85+ | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Male | 15 | 17 | 43 | 54 | 105 | 130 | 142 | 119 | 84 | 79 | 788 |
| Female | 4 | 8 | 25 | 51 | 44 | 96 | 110 | 126 | 82 | 84 | 630 |

## 3. Methodology

The clinical audit data presented in this report was collected by clinical audit staff in each NHS Board in accordance with an agreed dataset and definitions. The data was recorded manually and entered locally into the electronic Cancer Audit Support Environment (eCASE): a secure centralised web-based database. Data relating to patients diagnosed between 1st January 2014 and 31st December 2014 was downloaded from eCASE at 2200 hrs on 19th August 2015. Cancer audit is a dynamic process with patient data continually being revised and updated as more information becomes available. This means that apparently comparable reports for the same time period and cancer site may produce slightly different figures if extracted at different times.

Analysis was performed centrally by the WoSCAN Information Team on behalf of the National MCN and the timescales agreed took into account the patient pathway to ensure that a complete treatment record was available for each case. Initial results of the analysis were provided to local Boards to check for inaccuracies, inconsistencies or obvious gaps and a subsequent download taken upon which final analysis was carried out. The final data analysis was disseminated for NHS Board verification in line with the regional audit governance process to ensure that the data was an accurate representation of service in each area.

Once all NHS Boards had been given the opportunity to verify their data, further analyses were carried out at a regional and national level to provide an overall assessment of the quality of HPB cancer services in Scotland. These treatment centre-based results were provided to key regional clinicians/ clinical leads for comment ahead of publication.

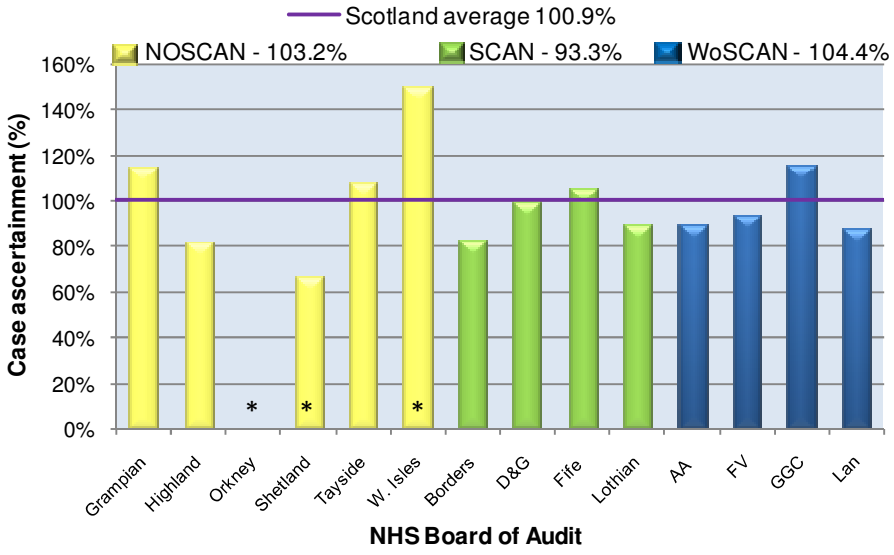
# 4. Results and Action Required

## 4.1 Data Quality

Audit data quality can be assessed in the first instance by estimating the proportion of expected patients that have been identified through audit. Case ascertainment is calculated as the number of new cases identified by the audit as a proportion of the number of cases reported by the National Cancer Registry (provided by ISD, National Services Scotland), by NHS Board of diagnosis. Cancer Registry figures were extracted from ACaDMe (Acute Cancer Deaths and Mental Health), a system provided by ISD. Cancer Registry figures are an average of the previous five years' figures to take account of annual fluctuations in incidence within NHS Boards.

Overall case ascertainment for HPB cancer in Scotland is high at 101% which indicates excellent data capture through audit. Case ascertainment figures however are provided for guidance and are not an exact measurement as it is not possible to compare directly with the same cohort. Case ascertainment for each NHS Board across Scotland is illustrated in Figure 4 and indicates good data capture across all NHS Boards in 2014. This level of data capture aids the interpretation of analysis based on cancer audit data, as more complete data will return more reliable results.

**Figure 4: Estimated case ascertainment by location of diagnosis for patients diagnosed in 2014**




| | Grampian | Highland | Orkney | Shetland | Tayside | W. Isles | Borders | D&G | Fife | Lothian | AA | FV | GGC | Lan |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Cases from audit | 140 | 67 | 0 | 2 | 135 | 6 | 23 | 42 | 88 | 220 | 90 | 63 | 425 | 117 |
| Cancer Reg. Cases (2008-2012) | 122 | 82 | 3 | 3 | 125 | 4 | 28 | 42 | 83 | 247 | 101 | 67 | 365 | 133 |
| % Case ascertainment | 114.8% | 81.7% | 0.0% | 66.7% | 108.0% | 150.0% | 82.1% | 100.0% | 106.0% | 89.1% | 89.1% | 94.0% | 116.4% | 88.0% |

As HPB services are based around specialist centres, the data are analysed based upon the location of treatment. This has presented problems in the past with regards to the data quality where patients have moved between NHS Boards for diagnosis and treatment. The quality and completeness of treatment information has however improved over the past 5 years where there is cross-boundary movement, and continued effort in this area is essential to ensure this level of data quality is maintained going forward.

## 4.2 Performance against Quality Performance Indicators (QPIs)

Results of the analysis of HPB Cancer Quality Performance Indicators (QPIs 1 to 11) 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.

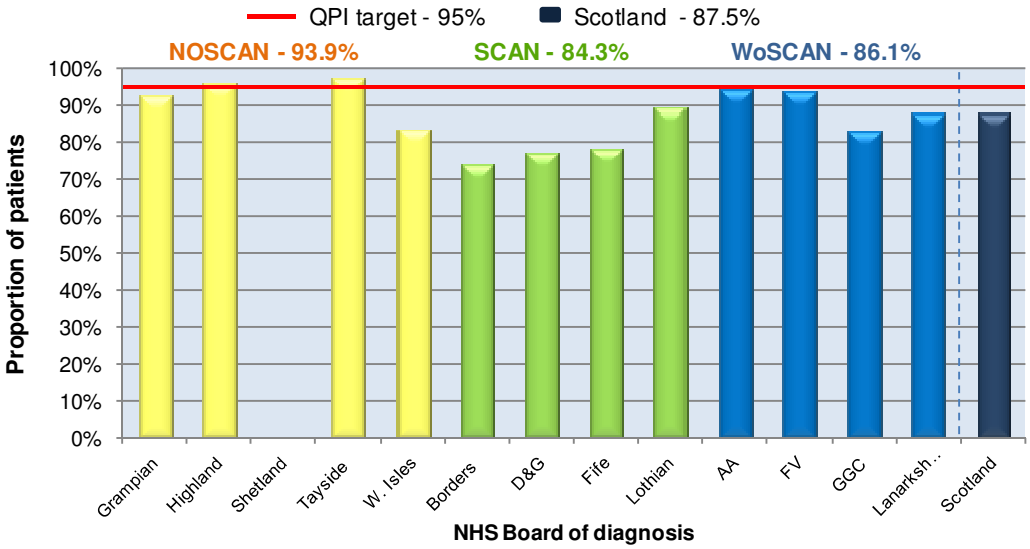
Data (both graphically and in tabular format) are presented by location of diagnosis or treatment, with some criteria given as an overall Regional representation. Specific regional and NHS Board actions have been identified to address issues highlighted through the data analysis.

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 are denoted with a dash (-). Any commentary provided by NHS Boards relating to the impacted indicators will however be included as a record of continuous improvement.

**QPI 1: Multi-Disciplinary (MDT) Meeting**

Effective MDT working is considered integral to provision of high quality HPB cancer care, facilitating a cohesive treatment-planning function and ensuring treatment provision is individualised to patient needs. QPI 1 states that 95% of patients should be discussed at the MDT prior to definitive treatment. The tolerance allows for patients who need treatment urgently.

| | |
|---|---|
| Title: | Patients with newly diagnosed lung cancer should be discussed by a MDT prior to definitive treatment. |
| Numerator: | Number of patients with HPB cancer discussed at the MDT before definitive treatment. |
| Denominator: | All patients with HPB cancer. |
| Exclusions: | Patients who died before first treatment. |
| Target: | 95% or above |




| QPI 1 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **Grampian** | 92.4% | 122 | 132 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Highland** | 92.1% | 58 | 63 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Shetland*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Tayside** | 96.8% | 122 | 126 | 0 | 0.0% | 0 | 0.0% | 0 |
| **W. Isles** | 83.3% | 5 | 6 | 0 | 0.0% | 0 | 0.0% | 0 |
| **NOSCAN** | **93.9%** | **309** | **329** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **Borders** | 73.9% | 17 | 23 | 1 | 4.3% | 0 | 0.0% | 0 |
| **D&G** | 76.9% | 30 | 39 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Fife** | 78.2% | 68 | 87 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lothian** | 89.3% | 192 | 215 | 0 | 0.0% | 0 | 0.0% | 0 |
| **SCAN** | **84.3%** | **307** | **364** | **1** | **0.3%** | **0** | **0.0%** | **0** |
| **AA** | 93.9% | 77 | 82 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Forth Valley** | 93.5% | 58 | 62 | 0 | 0.0% | 0 | 0.0% | 0 |
| **GGC** | 82.7% | 316 | 382 | 3 | 0.8% | 2 | 0.5% | 0 |
| **Lanarkshire** | 87.7% | 93 | 106 | 1 | 0.9% | 0 | 0.0% | 0 |
| **WoSCAN** | **86.1%** | **544** | **632** | **4** | **0.6%** | **2** | **0.3%** | **0** |
| **Scotland** | **87.5%** | **1160** | **1325** | **5** | **0.4%** | **2** | **0.2%** | **0** |

**-** Data not shown due to small numbers.

Only one Board across Scotland reached the target level for this indicator in 2014, however performance was, in the main, encouraging with the majority of Boards reaching approximately 90% of patients being discussed at MDT prior to definitive treatment.

A number of Boards have reviewed all cases which did not meet the target and noted valid clinical reasons for this, including: patients who died before MDT, incidental findings following surgery and patients receiving emergency treatment to palliate symptoms prior to MDT discussion. Some Boards noted that some patients with HPB cancer were not referred to the MDT as they were undergoing supportive care only. The importance of referral of all patients to an HPB Cancer MDT at the first opportunity will continue to be emphasised by the NMCN.

**Actions:**

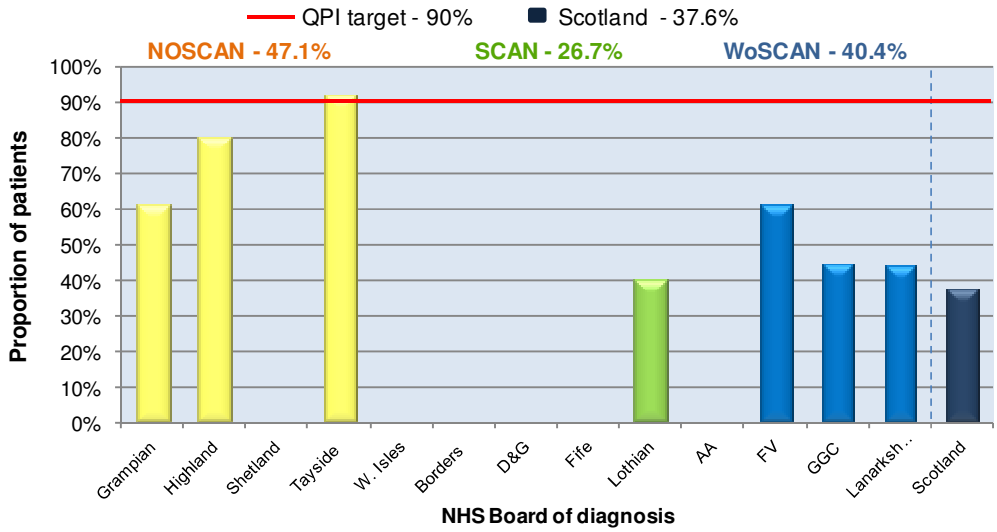
- Lothian, Fife, Borders, Dumfries & Galloway and GGC to review patients who were not discussed at an MDT meeting to ensure that this was appropriate and review pathways if required

### QPI 2: Diagnosis and Staging of HCC

The management of hepatocellular carcinoma (HCC) is determined by both the stage of HCC and the presence or severity of underlying chronic liver disease[1]. Complete information is required to enable correct management decisions to be made by the multidisciplinary team (MDT), such as the location, number and size of tumours; a full list of the required information is published within the HPB QPI document[1] and appendix 1 of this report. The 90% target set for QPI 2 accounts for the fact that some patients may have significant co-morbidities and therefore may not be fit for investigation and/or treatment[1].

| | |
|---|---|
| QPI 2: | Patients with Hepatocellular Carcinoma (HCC) should be appropriately diagnosed and staged |
| Description: | Proportion of patients with HCC who have undergone computerised tomography (CT) or Magnetic Resonance Imaging (MRI) and with full information recorded |
| Numerator: | Number of patients with HCC undergoing either CT or MRI with full information recorded (see Appendix 1) |
| Denominator: | All patients with HCC |
| Exclusions: | No exclusions |
| Target: | 90% |

**Figure 6: Proportion of patients diagnosed with HCC in 2014 that have undergone contrast-enhanced CT or MRI with full information recorded, by NHS Board of diagnosis.**




| QPI 2 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **Grampian** | 6.1% | 2 | 33 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Highland** | 80.0% | 8 | 10 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Shetland*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Tayside** | 91.7% | 22 | 24 | 0 | 0.0% | 0 | 0.0% | 0 |
| **W. Isles*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **NOSCAN** | **47.1%** | **32** | **68** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **Borders** | 0.0% | 0 | 5 | 0 | 0.0% | 0 | 0.0% | 0 |
| **D&G** | 0.0% | 0 | 10 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Fife** | 0.0% | 0 | 20 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lothian** | 40.0% | 28 | 70 | 0 | 0.0% | 0 | 0.0% | 0 |
| **SCAN** | **26.7%** | **28** | **105** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **AA** | 0.0% | 0 | 20 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Forth Valley** | 61.5% | 8 | 13 | 0 | 0.0% | 0 | 0.0% | 0 |
| **GGC** | 44.2% | 57 | 129 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lanarkshire** | 43.8% | 7 | 16 | 0 | 0.0% | 0 | 0.0% | 0 |
| **WoSCAN** | **40.4%** | **72** | **178** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **Scotland** | **37.6%** | **132** | **351** | **0** | **0.0%** | **0** | **0.0%** | **0** |

**-** Data not shown due to small numbers.

Despite changes to the measurement of this QPI to ensure clinical appropriateness, during baseline review, the majority of Boards do not achieve the target level. As demonstrated in appendix 1, there are a number of information points which require to be included to ensure full information recorded. Those information points most frequently missing are: vascular invasion, Childs Pugh score and final metastases stage. The majority of Boards have reviewed cases and documented appropriate clinical reasons where patients had not undergone diagnostic imaging.

SCAN have noted that they will review their regional MDT referral forms to ascertain whether further amendments would improve reporting against this indicator and ensure full information available at MDT discussion. NHS Ayrshire & Arran and Grampian noted that their MDT proforma / referral forms had recently been updated and an improvement in results should be seen in subsequent years' analysis.

**Actions:**

- NHS Lothian to review regional MDT referral forms again to ascertain whether further amendments could be made to improve available information.
- NHS GGC to review cases which did not meet the target and provide feedback to the NMCN, noting actions required where appropriate.

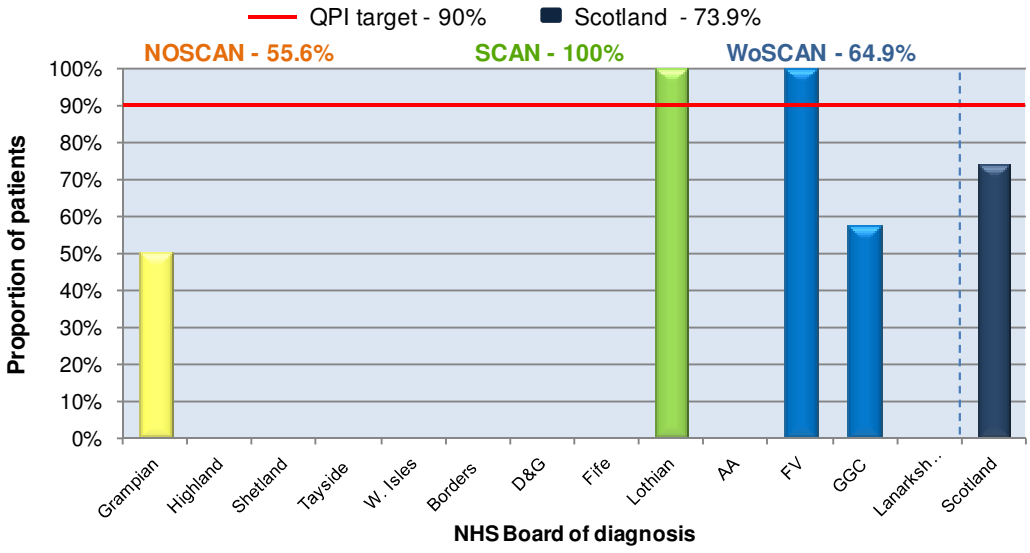
### QPI 3: Referral to Scottish Liver Transplant Unit

The Scottish Liver Transplant Unit (SLTU) was established in 1992 at the Royal Infirmary in Edinburgh and is the specialist centre for liver transplantation in Scotland. Liver transplantation is associated with good long term outcome in selected patients with HCC[1]. All patients with early HCC should be considered for liver transplantation and there should be equity of access to liver transplantation across Scotland[1]. The current UK listing criteria are well validated selection criteria based on tumour number and size. Full details are published within the HPB QPI document[1].

QPI 3 states that 90% of patients with HCC meeting the UK listing criteria should be referred to the SLTU for consideration of liver transplantation. The tolerance within this target accounts for cases where referral may not be appropriate due to factors with regard to patient fitness.

| | |
|---|---|
| QPI 3: | Patients with early HCC should be referred for consideration of liver transplantation |
| Description: | Proportion of patients with HCC who meet the current UK listing criteria for orthotopic liver transplantation referred to the SLTU for consideration of liver transplantation |
| Numerator: | Number of patients with HCC meeting the UK listing criteria that are referred to SLTU |
| Denominator: | All patients with HCC meeting UK listing criteria[1] (as defined by NHS Blood and Transplant (NHSBT)) |
| Exclusions: | • Patients who refuse treatment<br>• Patients with alpha-fetoprotein (AFP) >1000iu/ml<br>• Patients with evidence of vascular invasion<br>• Patients with extrahepatic disease |
| Target: | 90% |

**Figure 7: Proportion of patients diagnosed with HCC in 2014 who meet the UK listing criteria for orthotopic liver transplantation referred to the SLTU for consideration of liver transplant.**



| QPI 3 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **Grampian** | 50.0% | 4 | 8 | 3 | 37.5% | 4 | 50.0% | 3 |
| **Highland*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Shetland** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Tayside** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **W. Isles** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **NOSCAN** | **55.6%** | **5** | **9** | **3** | **33.3%** | **4** | **44.4%** | **3** |
| **Borders** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 3 |
| **D&G*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 3 |
| **Fife** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lothian** | 100.0% | 25 | 25 | 0 | 0.0% | 0 | 0.0% | 0 |
| **SCAN** | **100.0%** | **26** | **26** | **0** | **0.0%** | **0** | **0.0%** | **6** |
| **AA*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Forth Valley** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **GGC** | 57.4% | 27 | 47 | 0 | 0.0% | 6 | 12.8% | 5 |
| **Lanarkshire*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 2 |
| **WoSCAN** | **64.9%** | **37** | **57** | **0** | **0.0%** | **6** | **10.5%** | **7** |
| **Scotland** | **73.9%** | **68** | **92** | **3** | **3.3%** | **10** | **10.9%** | **16** |

**-** Data not shown due to small numbers.

QPI 3 was not met by either NOSCAN or WoSCAN in 2014. NHS Grampian have noted that, following review, all cases that met the criteria were discussed with SLTU however poor recording of these discussions has affected results presented. A system has now been put in place locally to address this and ensure that audit staff have sufficient information to report this indicator in a comparable way.

**Actions:**

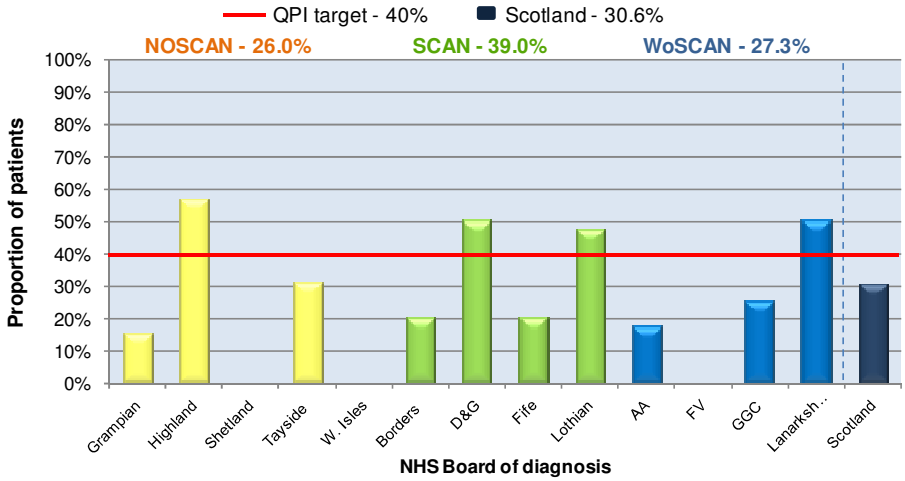
- NHS GGC to review cases which were not referred to SLTU and provide feedback to the NMCN, detailing action to be taken where appropriate.
- NHS Borders to review cases where information is not recorded to ensure patients who should be included in the denominator are being included.

## QPI 4: Palliative Treatment for HCC

Trans-arterial chemoembolisation (TACE) and Systemic Anti Cancer Therapy (SACT) are palliative therapies which have been demonstrated to improve survival in patients with HCC and well compensated chronic liver disease that are not suitable for treatments with curative intent[1]. The target within this QPI is set at 40% and accounts for the fact that some patients will have significant co-morbidities or a fitness level which means that TACE or SACT are not appropriate[1].

| | |
|---|---|
| QPI 4: | Patients with Hepatocellular Carcinoma (HCC) who are not suitable for curative treatment should receive palliative treatment |
| Description: | Proportion of patients with HCC not suitable for treatment with curative intent (liver transplantation, resection or ablative therapies) that undergo specific treatment with palliative intent (Trans-arterial chemoembolisation (TACE) or Systemic Anti Cancer Therapy (SACT)) |
| Numerator: | Number of patients with HCC not undergoing treatment with curative intent who receive TACE or approved SACT |
| Denominator: | All patients with HCC not undergoing treatment with curative intent (liver transplantation, resection or ablative therapies) |
| Exclusions: | • Patients who refuse treatment<br>• Patients with decompensated chronic liver disease (Child's Pugh Grade C) |
| Target: | 40% |

**Figure 8: Proportion of patients diagnosed with HCC in 2014 not suitable for treatment with curative intent that undergo specific treatment with palliative intent (TACE, SACT) by NHS Board of diagnosis.**



| QPI 4 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **Grampian** | 15.4% | 4 | 26 | 0 | 0.0% | 26 | 100.0% | 0 |
| **Highland** | 57.1% | 4 | 7 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Shetland** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Tayside** | 31.3% | 5 | 16 | 0 | 0.0% | 0 | 0.0% | 0 |
| **W. Isles*** | - | - | - | 0 | 0.0% | - | - | 0 |
| **NOSCAN** | **26.0%** | **13** | **50** | **0** | **0.0%** | **27** | **54.0%** | **0** |
| **Borders** | 20.0% | 1 | 5 | 0 | 0.0% | 5 | 100.0% | 0 |
| **D&G** | 50.0% | 4 | 8 | 0 | 0.0% | 1 | 12.5% | 0 |
| **Fife** | 20.0% | 4 | 20 | 0 | 0.0% | 17 | 85.0% | 0 |
| **Lothian** | 47.7% | 21 | 44 | 0 | 0.0% | 11 | 25.0% | 0 |
| **SCAN** | **39.0%** | **30** | **77** | **0** | **0.0%** | **34** | **44.2%** | **0** |
| **AA** | 17.6% | 3 | 17 | 0 | 0.0% | 16 | 94.1% | 0 |
| **Forth Valley*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **GGC** | 25.6% | 22 | 86 | 1 | 1.2% | 37 | 43.0% | 2 |
| **Lanarkshire** | 50.0% | 7 | 14 | 0 | 0.0% | 1 | 7.1% | 0 |
| **WoSCAN** | **27.3%** | **33** | **121** | **1** | **0.8%** | **54** | **44.6%** | **2** |
| **Scotland** | **30.6%** | **76** | **248** | **1** | **0.4%** | **115** | **46.4%** | **2** |

**-** Data not shown due to small numbers.

Only NHS Highland, Lanarkshire and Dumfries & Galloway met the target level for this QPI. A number of Boards have reviewed those cases where patients did not receive curative treatment, TACE or SACT and documented appropriate clinical reasons for this, principally surrounding fitness for treatment and patient choice.

Improved recording of Childs Pugh score would improve the quality of results for this QPI. Many patients included within the calculation as not meeting the indicator would likely have been excluded if Childs Pugh recorded (see 'not recorded for exclusions' in table above). As per QPI 2, an improvement in data capture through MDT would likely have a significant effect on results presented for this QPI in subsequent years.

**Actions:**

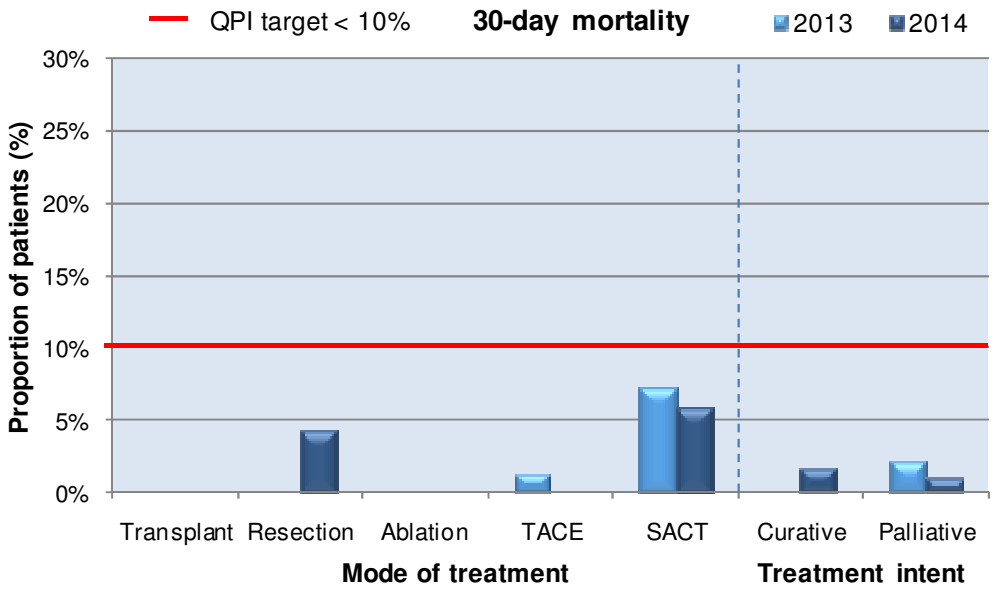
- NHS GGC, Tayside, Grampian and all SCAN Boards to review patients who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN.

**QPI 5a-e: 30/90-day Mortality for HCC Cancers (palliative and curative treatments)**

Disease specific interventions for HCC are delivered with either curative (transplant, resection, ablation) or palliative (TACE, SACT) intent. In either case, treatments should be performed safely with low rates of mortality and should not be undertaken in futile situations[1]. Mortality figures by treatment type are presented graphically for Scotland as a whole, and the accompanying table illustrates figures by treatment type for each regional centre. Mortality rates should be less than 10% for both curative and palliative treatments.

| | |
|---|---|
| QPI 5: | 30/90 day mortality following treatment for Hepatocellular Carcinoma (HCC) with curative (transplant, resection, ablation) or palliative (TACE, SACT) intent |
| Description: | Proportion of patients with HCC undergoing disease specific treatment, either curative or palliative, who die within 30/90 days of definitive treatment |
| Numerator: | Number of patients with HCC undergoing curative or palliative treatment that die within 30/90 days of definitive treatment |
| Denominator: | All patients with HCC undergoing:-<br>**Curative:**<br>a) Liver transplant<br>b) Resection<br>c) Ablation<br>**Palliative:**<br>d) TACE<br>e) SACT |
| Exclusions: | No exclusions |
| Target: | < 10% |

**Figure 9: Proportion of patients in Scotland diagnosed with HCC in 2014 undergoing disease-specific treatment that die within 30 days of definitive treatment.**

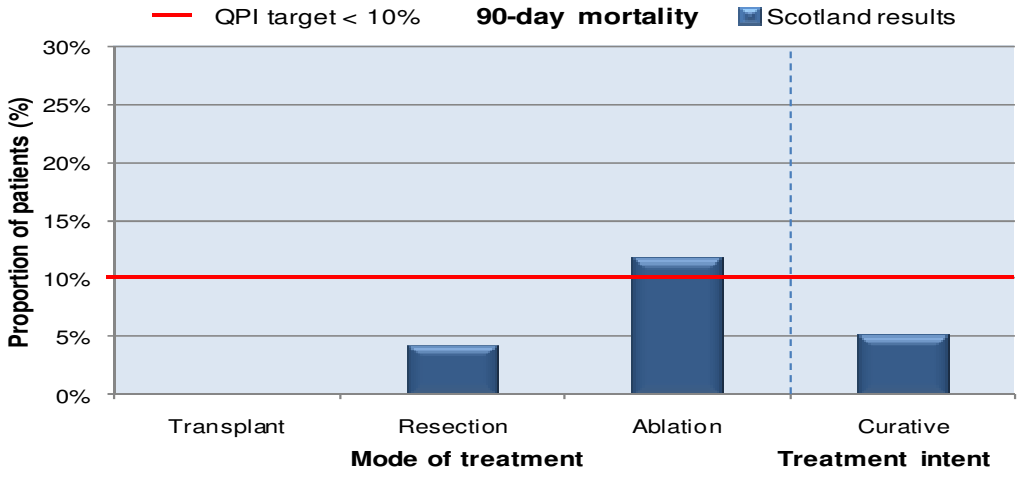


| QPI 5: 30-day | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| | **Liver Transplant** | | | | | | | |
| **Aberdeen** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | 0.0% | 0 | 17 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **0.0%** | **0** | **17** | **0** | **0.0%** | **0** | **0.0%** | **1** |
| | **Liver Resection** | | | | | | | |
| **Aberdeen** | 20.0% | 1 | 5 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | 0.0% | 0 | 17 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | - | - | - | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **4.2%** | **1** | **24** | **0** | **0.0%** | **0** | **0.0%** | **1** |
| | **Ablation** | | | | | | | |
| **Aberdeen** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | 0.0% | 0 | 8 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | 0.0% | 0 | 9 | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **0.0%** | **0** | **18** | **0** | **0.0%** | **0** | **0.0%** | **1** |
| | **TACE** | | | | | | | |
| **Aberdeen** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | 0.0% | 0 | 48 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | 0.0% | 0 | 28 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Non-specialist** | - | - | - | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **0.0%** | **0** | **88** | **0** | **0.0%** | **0** | **0.0%** | **1** |
| | **SACT** | | | | | | | |
| **Aberdeen** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | 10.0% | 1 | 10 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Non-specialist** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **SCOTLAND** | **5.9%** | **1** | **17** | **0** | **0.0%** | **0** | **0.0%** | **0** |

**-** Data not shown due to small numbers.

Encouragingly this QPI was met at a Scotland level for all treatment options; however Aberdeen had a 30 day mortality rate of 20% following liver resection. Given the small numbers involved this percentage should be compared with caution.

**Figure 10: Proportion of patients in Scotland diagnosed with HCC in 2014 undergoing disease-specific treatment that die within 90 days of definitive treatment.**



| QPI 5: 90-day | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| | **Liver Transplant** | | | | | | | |
| **Aberdeen** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | 0.0% | 0 | 17 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **0.0%** | **0** | **17** | **0** | **0.0%** | **0** | **0.0%** | **1** |
| | **Liver Resection** | | | | | | | |
| **Aberdeen** | 20.0% | 1 | 5 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | 0.0% | 0 | 17 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | - | - | - | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **4.2%** | **1** | **24** | **0** | **0.0%** | **0** | **0.0%** | **1** |
| | **Ablation** | | | | | | | |
| **Aberdeen** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Inverness** | NA | 0 | 0 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Dundee** | 1 | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Edinburgh** | 0.0% | 0 | 8 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Glasgow** | 25.0% | 2 | 8 | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **11.8%** | **2** | **17** | **0** | **0.0%** | **0** | **0.0%** | **1** |

- Data not shown due to small numbers.

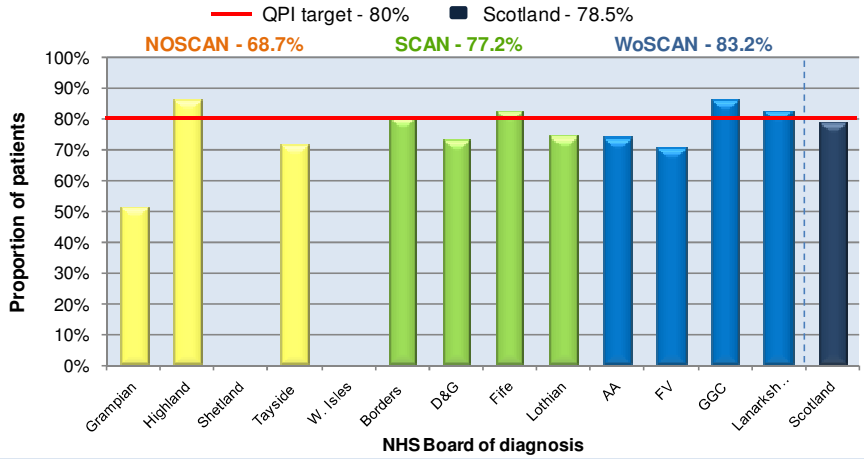
Encouragingly this QPI was met at a Scotland level for all treatment options except for ablation. Glasgow have reviewed all cases where patients died within 90 days of ablative therapy and noted that cases will be discussed at the national morbidity and mortality meeting. Given the small numbers involved within this measurement, percentages should be compared with caution.

### QPI 6: Radiological Diagnosis of Pancreatic, Duodenal or Biliary Tract Cancer

Accurate staging is important to ensure appropriate treatment is delivered and futile interventions avoided[1]. The primary tumour and its local extent should be defined and the presence or absence of metastatic disease assessed. CT is recommended for the diagnosis of pancreatic cancer as it will accurately delineate tumour size, infiltration, and the presence of metastatic disease[1]. Some patients may present with very advanced disease and may not be fit for investigation and/or treatment and the 80% target accounts for such patients.

| | |
|---|---|
| QPI 6: | Patients with pancreatic, duodenal or biliary tract cancers should undergo a computerised tomography (CT) of the chest, abdomen and pelvis to evaluate the extent of disease |
| Description: | Proportion of patients with pancreatic, duodenal or biliary tract cancer who undergo CT of the chest, abdomen and pelvis |
| Numerator: | Number of patients with pancreatic, duodenal or biliary tract cancer who undergo CT of the chest, abdomen and pelvis |
| Denominator: | All patients with pancreatic, duodenal or biliary tract cancer |
| Exclusions: | Patients undergoing supportive care only |
| Target: | 80% |

**Figure 11: Proportion of patients diagnosed with pancreatic, duodenal or biliary tract cancer in 2014 that undergo contrast-enhanced CT of the chest, abdomen and pelvis.**




| QPI 6 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **Grampian** | 51.2% | 22 | 43 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Highland** | 86.2% | 25 | 29 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Shetland*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Tayside** | 71.8% | 28 | 39 | 0 | 0.0% | 0 | 0.0% | 0 |
| **W. Isles*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **NOSCAN** | **68.7%** | **79** | **115** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **Borders** | 80.0% | 4 | 5 | 0 | 0.0% | 0 | 0.0% | 0 |
| **D&G** | 73.3% | 11 | 15 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Fife** | 82.4% | 28 | 34 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lothian** | 74.5% | 35 | 47 | 0 | 0.0% | 0 | 0.0% | 0 |
| **SCAN** | **77.2%** | **78** | **101** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **AA** | 73.7% | 14 | 19 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Forth Valley** | 70.6% | 12 | 17 | 0 | 0.0% | 0 | 0.0% | 0 |
| **GGC** | 86.0% | 141 | 164 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lanarkshire** | 82.4% | 56 | 68 | 0 | 0.0% | 0 | 0.0% | 0 |
| **WoSCAN** | **83.2%** | **223** | **268** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **Scotland** | **78.5%** | **380** | **484** | **0** | **0.0%** | **0** | **0.0%** | **0** |

There is variance in results against this QPI across Boards, however in the main performance in encouraging and an improvement on the previous years results. The majority of Boards have reviewed cases where a CT chest, abdomen and pelvis was not undertaken and have documented a number of appropriate clinical reasons for this including: incidental finding of cancer following surgery and patient choice.

Both NHS Forth Valley and Lothian noted that CT of the pelvis is not always indicated for this patient group. NHS Grampian commented that CT chest was not always performed, following MDT discussion, as patients were not being considered for further treatment. The diagnostic pathway should be reviewed and discussed by the local team.

**Action:**

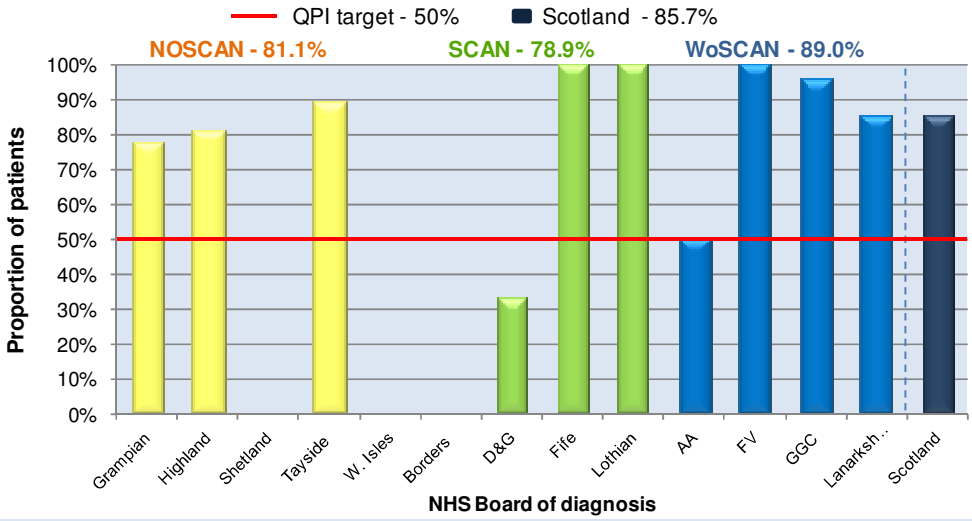
- NHS Grampian to review and discuss local diagnostic pathway for pancreatic, duodenal and biliary tract cancers.

## QPI 7: Pathological Diagnosis of Pancreatic, Duodenal or Biliary Tract Cancer

In patients who are being considered for anti-cancer therapy, definitive cytological or histological diagnosis is essential before chemotherapy to ensure full benefit of any treatment offered[1]. Even when no active treatment is being considered, a definitive diagnosis is valuable in helping to inform patients and carers about the nature of the disease and the likely prognosis[1]. It is not always appropriate, safe or possible to obtain a histological or cytological diagnosis due to the performance status of the patient or advanced nature of the disease and the 50% target reflects this and also factors relating to patient choice.

| | |
|---|---|
| QPI 7: | Patients with pancreatic, duodenal or biliary tract cancers having non-surgical treatment should have a cytological or histological diagnosis |
| Description: | Proportion of patients with pancreatic, duodenal or biliary tract cancer undergoing non-surgical treatment who have a cytological or histological diagnosis |
| Numerator: | Number of patients with pancreatic, duodenal or distal biliary tract cancer undergoing non-surgical treatment who have a histological or cytological diagnosis (e.g. brush cytology, endoscopic or image guided biopsy) |
| Denominator: | All patients with pancreatic, duodenal or distal biliary tract undergoing non-surgical treatment |
| Exclusions: | No exclusions |
| Target: | 50% |

**Figure 12: Proportion of patients diagnosed with pancreatic, duodenal or biliary tract cancer in 2014 undergoing non-surgical treatment that have a cytological or histological diagnosis.**




| QPI 7 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **Grampian** | 77.8% | 7 | 9 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Highland** | 81.3% | 13 | 16 | 0 | 0.0% | 0 | 0.0% | 1 |
| **Shetland*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Tayside** | 88.9% | 8 | 9 | 0 | 0.0% | 0 | 0.0% | 0 |
| **W. Isles*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **NOSCAN** | **81.1%** | **30** | **37** | **0** | **0.0%** | **0** | **0.0%** | **1** |
| **Borders*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **D&G** | 33.3% | 2 | 6 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Fife** | 100.0% | 6 | 6 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lothian** | 100.0% | 6 | 6 | 0 | 0.0% | 0 | 0.0% | 0 |
| **SCAN** | **78.9%** | **15** | **19** | **0** | **0.0%** | **0** | **0.0%** | **0** |

| QPI 7 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **AA** | 50.0% | 4 | 8 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Forth Valley** | 100.0% | 7 | 7 | 0 | 0.0% | 0 | 0.0% | 0 |
| **GGC** | 95.9% | 47 | 49 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lanarkshire** | 85.2% | 23 | 27 | 0 | 0.0% | 0 | 0.0% | 0 |
| **WoSCAN** | **89.0%** | **81** | **91** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **Scotland** | **85.7%** | **126** | **147** | **0** | **0.0%** | **0** | **0.0%** | **1** |

**-** Data not shown due to small numbers.

All Boards met the QPI target level of 50% in 2014, except for NHS Dumfries & Galloway. It should however be noted that patient numbers are small and therefore percentages should be compared with caution.

**Action:**

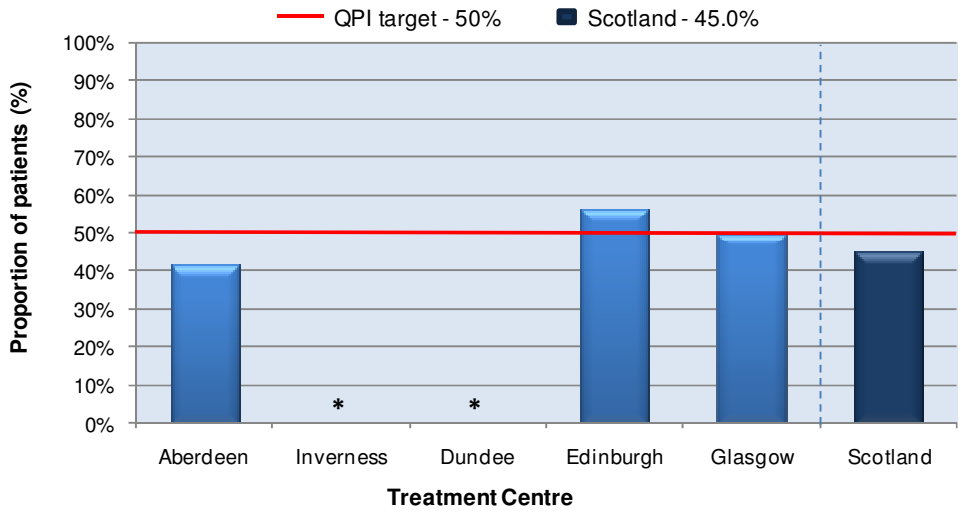
- NHS Dumfries & Galloway to review the cases who did not have a histological diagnosis and provide feedback to the NMCN.

## QPI 8: Systemic Therapy for Pancreatic Cancer

Adjuvant chemotherapy is the accepted standard of care for patients with pancreatic cancer following surgical resection and is proven to have survival benefit[1]. The 50% target accounts for patients who may have post-operative complications that preclude consideration of adjuvant therapy.

| | |
|---|---|
| QPI 8: | Patients undergoing resection for pancreatic cancer should receive adjuvant chemotherapy, where appropriate |
| Description: | Proportion of patients undergoing resection for pancreatic cancer receiving adjuvant chemotherapy |
| Numerator: | Number of patients undergoing pancreatic cancer resection who receive adjuvant chemotherapy |
| Denominator: | All patients undergoing resection for pancreatic cancer |
| Exclusions: | • Patients who die post-operatively (within 60 days of surgery)<br>• Patients who refuse chemotherapy |
| Target: | 50% |

**Figure 13: Proportion of patients diagnosed with pancreatic cancer in 2014 undergoing surgery that receive adjuvant chemotherapy.**




| QPI 8 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| Aberdeen | 41.7% | 5 | 12 | 0 | 0.0% | 0 | 0.0% | 0 |
| Inverness* | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| Dundee* | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| Edinburgh | 56.3% | 9 | 16 | 0 | 0.0% | 0 | 0.0% | 0 |
| Glasgow | 50.0% | 13 | 26 | 2 | 7.7% | 0 | 0.0% | 0 |
| **SCOTLAND** | **45.0%** | **27** | **60** | **2** | **3.3%** | **0** | **0.0%** | **0** |

- Data not shown due to small numbers.

This indicator was met by both Edinburgh and Glasgow centres in 2014, Glasgow noted that a number of additional patients included within the denominator did receive chemotherapy following surgery however this fell outwith the 84 days post surgery timeframe.

NHS Grampian have reviewed cases which did not meet this QPI and have commented that, like other centres, a number of patients included within the denominator did receive chemotherapy but

outwith the timescale to be deemed truly adjuvant. Furthermore it was noted that fitness for treatment accounted for those other cases where adjuvant treatment was not given.

**Action:**

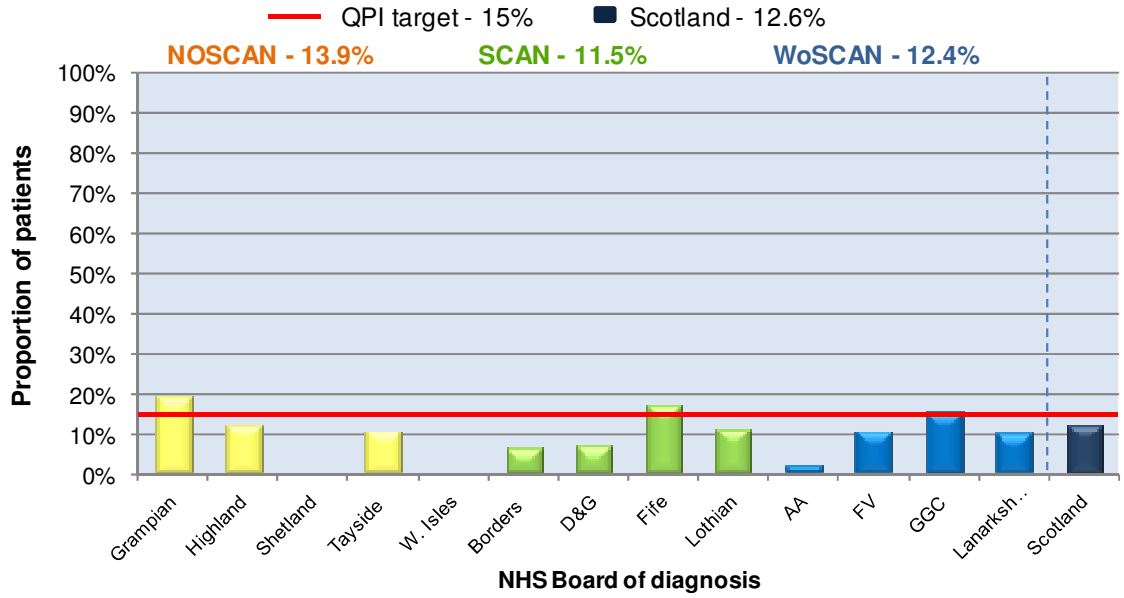
- NHS Tayside to review cases which did not receive adjuvant chemotherapy and provide feedback to the NMCN.

### QPI 9: Resection Rate for Pancreatic, Duodenal or Biliary Tract Cancer

Surgical resection is the only potentially curative treatment for pancreatic cancer. Where surgical resection is not carried out, the reason(s) should be clearly documented by the MDT. The 15% target for this QPI takes into consideration patient choice as well as patients who may develop complications during the pre-operative phase. The target recognises that the majority of patients will have advanced disease at presentation and will therefore not be suitable for curative surgery. The NMCN will review variation in surgical resection rates at the upcoming Mortality and Morbidity meeting.

| | |
|---|---|
| QPI 9: | Patients with localised pancreatic, distal biliary tract or duodenal cancer should have surgical resection |
| Description: | Proportion of patients who undergo resection for pancreatic, distal biliary tract or duodenal cancer |
| Numerator: | Number of patients with pancreatic, duodenal or distal biliary tract cancer who undergo resection |
| Denominator: | All patients with pancreatic, duodenal or distal biliary tract cancer |
| Exclusions: | No exclusions |
| Target: | 15% |

**Figure 14: Proportion of patients diagnosed with pancreatic, distal biliary tract or duodenal cancer in 2014 that undergo resection.**



| QPI 9 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| **Grampian** | 19.1% | 17 | 89 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Highland** | 12.2% | 6 | 49 | 1 | 2.0% | 0 | 0.0% | 0 |
| **Shetland*** | - | - | - | 0 | 0.0% | 0 | 0.0% | 0 |
| **Tayside** | 10.6% | 9 | 85 | 0 | 0.0% | 0 | 0.0% | 0 |
| **W. Isles** | 0.0% | 0 | 5 | 0 | 0.0% | 0 | 0.0% | 0 |
| **NOSCAN** | **13.9%** | **32** | **230** | **1** | **0.4%** | **0** | **0.0%** | **0** |
| **Borders** | 6.7% | 1 | 15 | 0 | 0.0% | 0 | 0.0% | 0 |
| **D&G** | 7.1% | 2 | 28 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Fife** | 17.1% | 7 | 41 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Lothian** | 11.2% | 13 | 116 | 0 | 0.0% | 0 | 0.0% | 0 |
| **SCAN** | **11.5%** | **23** | **200** | **0** | **0.0%** | **0** | **0.0%** | **0** |
| **AA** | 2.3% | 1 | 43 | 0 | 0.0% | 0 | 0.0% | 0 |
| **Forth Valley** | 10.5% | 4 | 38 | 0 | 0.0% | 0 | 0.0% | 0 |
| **GGC** | 15.6% | 35 | 225 | 1 | 0.4% | 0 | 0.0% | 0 |
| **Lanarkshire** | 10.0% | 8 | 80 | 0 | 0.0% | 0 | 0.0% | 0 |
| **WoSCAN** | **12.4%** | **48** | **386** | **1** | **0.3%** | **0** | **0.0%** | **0** |
| **Scotland** | **12.6%** | **103** | **816** | **2** | **0.2%** | **0** | **0.0%** | **0** |

**-** Data not shown due to small numbers.

The majority of Boards where the target of a 15% resection rate was not met have reviewed cases and documented appropriate clinical reasons for this, including: patients presenting with advanced disease where surgery is not appropriate, fitness and/or co-morbidities which preclude surgery and patient choice.

SCAN have noted, following review, that resection rates data should be reviewed locally over 3-5 years as small numbers are involved making it difficult to identify any significant variance across units.

**Action:**

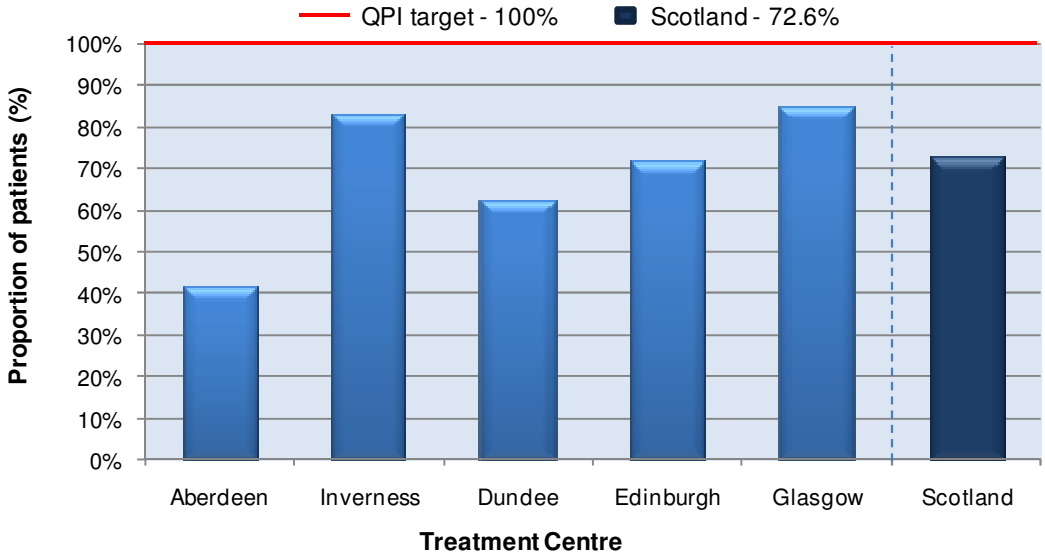
- NHS Highland and Tayside to review cases where surgical resection was not undertaken and feedback to NMCN on results.

## QPI 10: Lymph Node Yield (pancreatic cancer)

Adequate lymph node yield is important for accurate staging and is a surrogate marker of adequacy of en bloc cancer resection and diligence of the pathologist[1]. Evidence suggests that pancreatoduodenectomy should yield a minimum of 15 lymph nodes from the principal specimen[1]. Within the measurement of this QPI, pancreatoduodenectomy is being utilised as a proxy measurement for all surgical resection to ensure consistent and comparable measurement across NHS Scotland. The baseline review group proposed that the QPI should be broadened to look at all patients undergoing pancreatoduodenectomy, rather than only patients diagnosed with pancreatic cancer, to ensure consistency between all surgical QPIs. Lymph node yield should be maximised for all patients diagnosed with HPB cancer regardless of site and proposed changes await ratification.

| | |
|---|---|
| QPI 10: | In patients undergoing surgery for pancreatic , duodenal or distal biliary tract cancer the number of lymph nodes examined should be maximised |
| Description: | Proportion of patients with pancreatic , duodenal or distal biliary tract cancer who undergo surgical resection (pancreatoduodenectomy) where ≥15 lymph nodes are resected and pathologically examined |
| Numerator: | Number of patients with pancreatic , duodenal or distal biliary tract cancer who undergo pancreatoduodenectomy where ≥15 lymph nodes are resected and pathologically examined |
| Denominator: | All patients with pancreatic cancer, duodenal or distal biliary tract cancer who undergo pancreatoduodenectomy |
| Exclusions: | No exclusions |
| Target: | 100% |

**Figure 15: Proportion of patients diagnosed with pancreatic cancer in 2014 that undergo surgical resection (pancreatoduodenectomy) where ≥ 15 lymph nodes are resected and pathologically examined.**




| QPI 10 | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| Aberdeen | 41.7% | 5 | 12 | 0 | 0.0% | 0 | 0.0% | 0 |
| Inverness | 83.3% | 5 | 6 | 0 | 0.0% | 0 | 0.0% | 1 |
| Dundee | 62.5% | 5 | 8 | 0 | 0.0% | 0 | 0.0% | 0 |
| Edinburgh | 72.0% | 18 | 25 | 0 | 0.0% | 0 | 0.0% | 0 |
| Glasgow | 84.8% | 28 | 33 | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **72.6%** | **61** | **84** | **0** | **0.0%** | **0** | **0.0%** | **2** |

The target level has not been met by any surgical centre in 2014 which may be a function of pathological staging or of surgical resection. All Centres should review cases where less than 15 lymph nodes were resected and discuss with the pathology team.

**Action:**

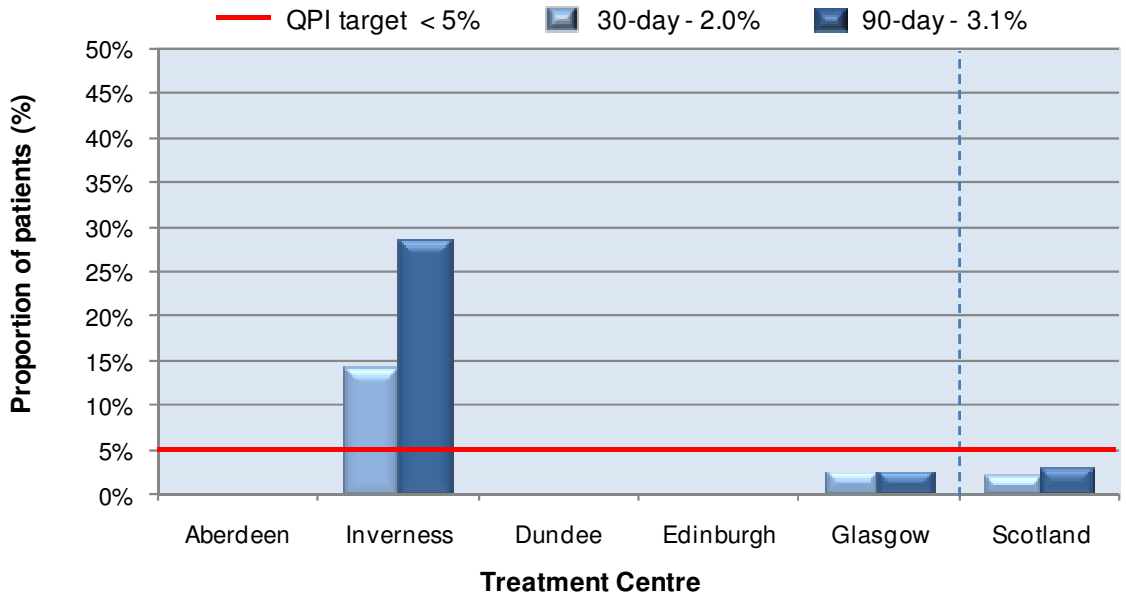
- Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team.

### QPI 11a/b: 30 and 90-day Mortality after Treatment with Curative Intent

Mortality following resection for HPB cancer has fallen over the past 30 years and in specialist units should be less than 5%[1]. Treatment related mortality is a marker of the quality and safety of the whole service provided by the multidisciplinary team.

| | |
|---|---|
| QPI 11a/b: | 30-day and 90-day mortality after surgery with curative intent for pancreatic, duodenal or distal biliary tract cancer |
| Description: | Proportion of patients undergoing surgical resection with curative intent for pancreatic, duodenal or distal biliary tract cancer who die within 30 or 90 days |
| Numerator: | Number of patients with pancreatic, duodenal or distal biliary tract cancer undergoing surgical resection who die within 30 or 90 days of surgery |
| Denominator: | All patients with pancreatic, duodenal or distal biliary tract cancer undergoing surgical resection |
| Exclusions: | No exclusions |
| Target: | < 5% |

**Figure 16: 11a - Proportion of patients diagnosed with pancreatic, duodenal or distal biliary tract cancer in 2014 undergoing surgical resection that die within 30/90 days of surgery.**



| QPI 11 – 30-day | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| Aberdeen | 0.0% | 0 | 16 | 0 | 0.0% | 0 | 0.0% | 0 |
| Inverness | 14.3% | 1 | 7 | 0 | 0.0% | 0 | 0.0% | 1 |
| Dundee | 0.0% | 0 | 9 | 0 | 0.0% | 0 | 0.0% | 0 |
| Edinburgh | 0.0% | 0 | 29 | 0 | 0.0% | 0 | 0.0% | 0 |
| Glasgow | 2.6% | 1 | 38 | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **2.0%** | **2** | **99** | **0** | **0.0%** | **0** | **0.0%** | **2** |

| QPI 11 – 90-day | Performance (%) | Numerator | Denominator | Not recorded numerator | Not recorded numerator (%) | Not recorded exclusions | Not recorded exclusions (%) | Not recorded denominator |
|---|---|---|---|---|---|---|---|---|
| Aberdeen | 0.0% | 0 | 15 | 0 | 0.0% | 0 | 0.0% | 0 |
| Inverness | 28.6% | 2 | 7 | 0 | 0.0% | 0 | 0.0% | 1 |
| Dundee | 0.0% | 0 | 9 | 0 | 0.0% | 0 | 0.0% | 0 |
| Edinburgh | 0.0% | 0 | 29 | 0 | 0.0% | 0 | 0.0% | 0 |
| Glasgow | 2.6% | 1 | 38 | 0 | 0.0% | 0 | 0.0% | 1 |
| **SCOTLAND** | **3.1%** | **3** | **98** | **0** | **0.0%** | **0** | **0.0%** | **2** |

NB. The denominator for 30-day and 90-day mortality may differ if 90 days has not passed since the date of surgery at time of audit.

It is encouraging that both 30 and 90 day mortality following surgical resection is very low in the majority of units.

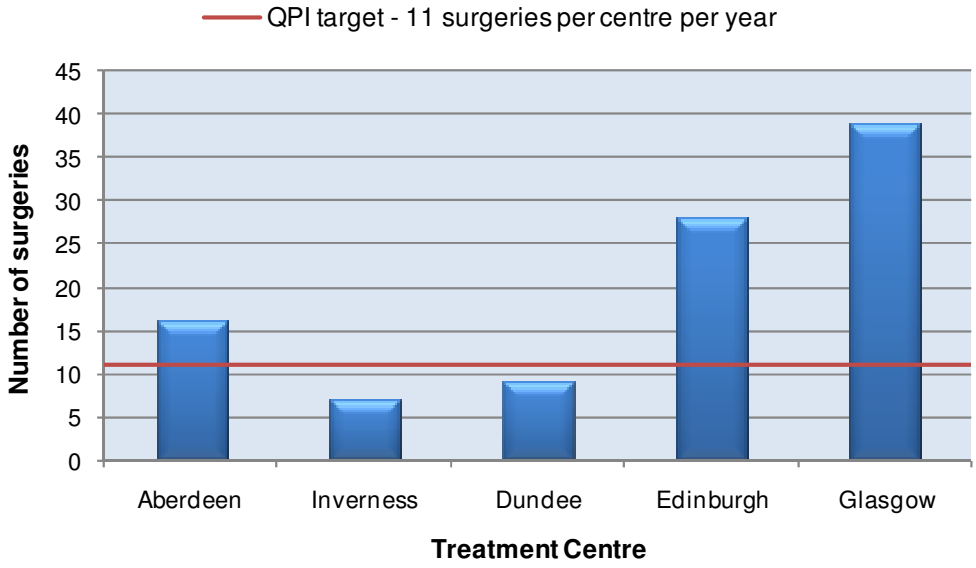
All cases where patients died within 90 days of surgical resection are discussed at the National Morbidity and Mortality meeting. Inverness noted that there is active engagement with all personnel involved in the perioperative care of major hepato-pancreatic resections.

### QPI 12a/b: Volume of Cases per Centre/Surgeon

HPB resectional surgery should be performed by surgeons who work in a specialist multidisciplinary team in a specialist centre, with outcomes audited regularly and benchmarked nationally[1]. Surgical resection should be confined to specialist centres to increase resection rates and reduce hospital morbidity and mortality. The literature demonstrates that there is a relationship between increasing surgical volumes for major hepatopancreatobiliary resections and improved patient outcomes (mortality)[1].

| | |
|---|---|
| QPI 12a/b: | HPB resectional surgery should be performed in hospitals where there is an appropriate annual volume of such cases. |
| Description: | Number of surgical resections for pancreatic, duodenal or distal biliary tract cancer performed by each surgeon/centre in a given year. |
| Target: | a) 11 cases per centre per year<br>b) 4 cases per surgeon per year |

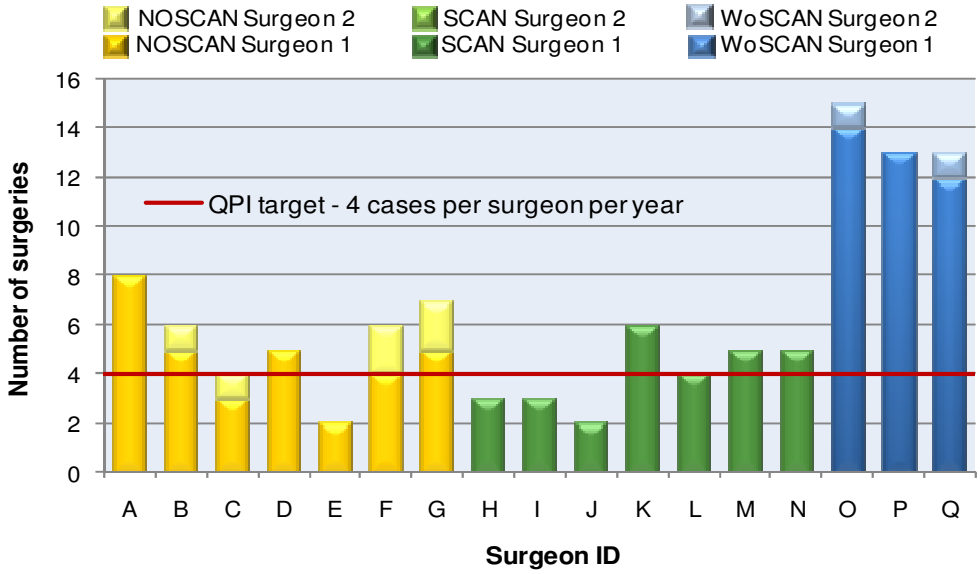
**Figure 17: Number of surgical resections for pancreatic, duodenal and biliary tract cancer performed by a specialist centre over a 1 year period.**




| QPI 12a | Aberdeen | Inverness | Dundee | Edinburgh | Glasgow | Scotland |
|---|---|---|---|---|---|---|
| Number of cases | 16 | 7 | 9 | 28 | 39 | 99 |

Only 3 surgical centres in Scotland met the target level of 11 surgeries per year in 2014. Both Dundee and Inverness surgical teams commented that all pancreatic resections should be included within the measurement of this QPI, i.e. pancreatic neuroendocrine tumours and solid pseudo-papillary tumours.

**Figure 18: Number of surgical resections for pancreatic, duodenal or biliary tract cancer performed by a specialist surgeon over a 1 year period (surgeon 1 or 2).**




| QPI 12b | SURGEON ID | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
| N1 | 8 | 5 | 3 | 5 | 2 | 4 | 5 | 3 | 3 | 2 | 6 | 4 | 5 | 5 | 14 | 13 | 12 |
| N2 | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| **TOTAL** | **8** | **6** | **4** | **5** | **2** | **6** | **7** | **3** | **3** | **2** | **6** | **4** | **5** | **5** | **15** | **13** | **13** |

N1 = Number of surgeries performed as operating surgeon 1
N2 = Number of surgeries performed as operating surgeon 2

A number of surgeons operating on HPB cancers did not reach the target level of procedures in 2014. SCAN has commented that there will be variance in the number of resections carried out each year. The Network will undertake local review of these figures from the last 3 years to ensure that on average all surgeons are undertaking the recommended number of resections. The NMCN recommends that each region undertakes a similar exercise as it is recognised that numbers will fluctuate year on year.

**Actions:**

- SCAN and NOSCAN data from the last 3 years to be reviewed locally to assess the average numbers of resections being carried out per surgeon and feedback results to NMCN.

## 5. Conclusions

Cancer audit data underpins much of the development and service improvement work of the NMCN and regular reporting of activity and performance is a fundamental requirement of an MCN to assure the quality of care delivered. The Scottish HepatoPancreatoBiliary Cancer NMCN remains committed to improve the quality and completeness of clinical audit data to ensure continued robust performance assessment and the identification of areas for service improvement.

Analysis of 2014 audit data demonstrates a continual commitment to provide an equitable and consistent standard of care for HPB cancer patients across Scotland. Improvements in data quality and completeness have been observed in recent years facilitating more meaningful data analysis and national comparison to help inform NMCN activity. The results presented illustrate that many of the QPI targets set have been challenging for NHS Boards to achieve and there remains room for further service improvement, however it is encouraging that targets relating to histological diagnosis and 30-day mortality following treatment were achieved by all centres.

Where QPI targets were not met NHS Boards have provided detailed commentary. In the main these indicate valid clinical reasons or that, in some cases, patient choice or co-morbidities have influenced patient management.

There are a number of actions required as a consequence of this assessment of performance against QPIs. Some of these relate to data quality improvement, specifically in relation to the documentation of information (following CT or MRI) to enable correct management decisions to be made by the multidisciplinary team. Additional actions were identified particularly in relation to variance in treatment rates, lymph node yield following resection and volumes of surgical resections per centre and surgeon.

The NMCN will actively take forward national actions identified and NHS Boards are asked to develop local Action/Improvement Plans in response to the findings presented in the report.

**Action Required:**

- Lothian, Fife, Borders, Dumfries & Galloway and GGC to review patients who were not discussed at an MDT meeting to ensure that this was appropriate and review pathways if required
- NHS Lothian to review regional MDT referral forms again to ascertain whether further amendments could be made to improve available information for patients with HCC.
- NHS GGC to review cases which did not meet the target for diagnosis and staging of HCC and provide feedback to the NMCN, noting actions required where appropriate.
- NHS GGC to review cases which were not referred to SLTU and provide feedback to the NMCN, detailing action to be taken where appropriate.
- NHS Borders to review cases where information is not recorded regarding listing criteria for liver transplant to ensure patients who should be included in the denominator are being included.
- NHS GGC, Tayside, Grampian and all SCAN Boards to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN.
- NHS Grampian to review and discuss local diagnostic pathway for pancreatic, duodenal and biliary tract cancers.
- NHS Dumfries & Galloway to review the cases who did not have a histological diagnosis and provide feedback to the NMCN.
- NHS Tayside to review cases which did not receive adjuvant chemotherapy and provide feedback to the NMCN.
- NHS Highland and Tayside to review cases where surgical resection was not undertaken and feedback to NMCN on results.

- Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team.
- SCAN and NOSCAN data from the last 3 years to be reviewed locally to assess the average numbers of resections being carried out per surgeon and feedback results to NMCN.

**Completed Action Plans should be returned to WoSCAN within two months of publication of this report.**

Progress against these plans will be monitored by the NMCN Advisory Board and any service or clinical issue which the Advisory Board considers not to have been adequately addressed will be escalated to the NHS Board Territorial Lead Cancer Clinician and National Lead Cancer Clinician.

Additionally, progress will be reported to the Regional Cancer Advisory Groups (RCAGs) annually by NHS Board Territorial Lead Cancer Clinicians and NMCN Clinical Lead, as part of the WoSCAN audit governance process to enable RCAGs to review and monitor regional improvement.

## 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 HPB cancer for their contribution to the clinical audit process.

## Abbreviations

| | |
|---|---|
| **AA** | NHS Ayrshire & Arran |
| **ACaDMe** | Acute Cancer Deaths and Mental Health |
| **ARI** | Aberdeen Royal Infirmary |
| **BWoSCC** | Beatson West of Scotland Cancer Centre |
| **CT** | Computerised tomography |
| **D&G** | NHS Dumfries & Galloway |
| **eCASE** | Electronic Cancer Audit Support Environment |
| **FV** | NHS Forth Valley |
| **GGC** | NHS Greater Glasgow and Clyde |
| **GRI** | Glasgow Royal Infirmary |
| **HCC** | Hepatocellular Carcinoma |
| **HIS** | Healthcare Improvement Scotland |
| **HPB** | HepatoPancreatoBiliary |
| **ICD-10** | International Classification of Diseases – 10th Revision |
| **ISD** | Information Services Division |
| **Lan** | NHS Lanarkshire |
| **MCN** | Managed Clinical Network |
| **MDT** | Multidisciplinary Team |
| **MRI** | Magnetic Resonance Imaging |
| **NCQSG** | National Cancer Quality Steering Group |
| **NHSBT** | NHS Blood and Transplant |
| **NHSGGC** | NHS Greater Glasgow and Clyde |
| **NMCN** | National Managed Clinical Network |
| **NOSCAN** | North of Scotland Cancer Network |
| **QPI(s)** | Quality Performance Indicator(s) |
| **RCAG(s)** | Regional Cancer Advisory Group(s) |
| **RIE** | Royal Infirmary of Edinburgh |
| **SACT** | Systemic Anti-Cancer Therapy |
| **SCAN** | South East Scotland Cancer Network |
| **SLTU** | Scottish Liver Transplant Unit |
| **TACE** | Trans-arterial chemoembolisation |
| **TNM** | Tumour, Nodes, Metastases (staging system) |
| **WoSCAN** | West of Scotland Cancer Network |

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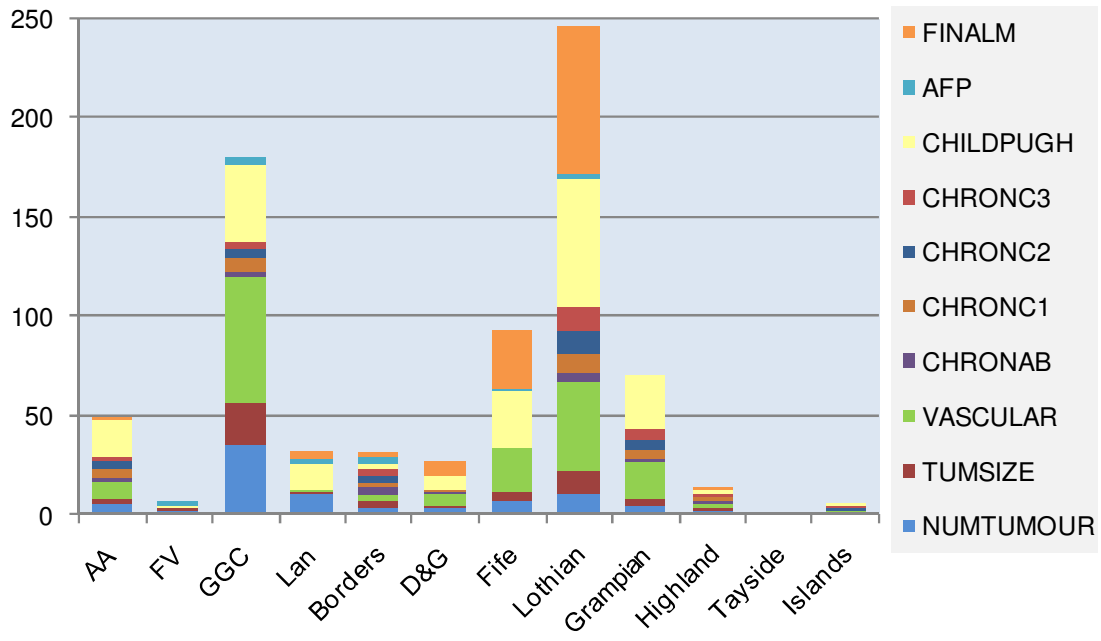
## Appendix 1: QPI 1 Diagnosis and Staging of HCC

### Missing values – data fields required for QPI 1

**Figure A1: Total number of missing values per data field by NHS Board/ Region (all 10 fields must be complete to be defined as 'full information recorded' for QPI 1).**




| | NUMTUMOUR | TUMSIZE | VASCULAR | CHRONAB | CHRONC1 | CHRONC2 | CHRONC3 | CHILDPUGH | AFP | FINALM | NHS Board/ Region Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| AA | 6 | 2 | 9 | 2 | 5 | 3 | 3 | 19 | 0 | 1 | **50** |
| FV | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | **7** |
| GGC | 35 | 22 | 63 | 3 | 7 | 4 | 4 | 39 | 3 | 0 | **180** |
| Lan | 10 | 2 | 1 | 0 | 0 | 0 | 0 | 13 | 2 | 4 | **32** |
| ***WoSCAN*** | ***53*** | ***28*** | ***73*** | ***5*** | ***12*** | ***7*** | ***7*** | ***72*** | ***7*** | ***5*** | ***269*** |
| Borders | 4 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | **32** |
| D&G | 3 | 2 | 6 | 1 | 1 | 0 | 0 | 7 | 0 | 7 | **27** |
| Fife | 7 | 5 | 22 | 0 | 0 | 0 | 0 | 28 | 2 | 29 | **93** |
| Lothian | 10 | 12 | 45 | 5 | 9 | 12 | 12 | 64 | 3 | 74 | **246** |
| ***SCAN*** | ***24*** | ***22*** | ***77*** | ***9*** | ***13*** | ***15*** | ***15*** | ***102*** | ***8*** | ***113*** | ***398*** |
| Grampian | 5 | 3 | 19 | 1 | 5 | 5 | 5 | 28 | 0 | 0 | **71** |
| Highland | 2 | 1 | 3 | 1 | 2 | 1 | 1 | 2 | 0 | 1 | **14** |
| Tayside | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **1** |
| Islands | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | **6** |
| ***NOSCAN*** | ***8*** | ***4*** | ***23*** | ***2*** | ***8*** | ***7*** | ***7*** | ***31*** | ***1*** | ***1*** | ***92*** |
| **Scotland** | **85** | **54** | **173** | **16** | **33** | **29** | **29** | **205** | **16** | **119** | **759** |

## Appendix 2: NHS Board Action Plans

A summary of actions for each NHS Board has been included within the following Action Plan templates. Completed Action Plans should be returned to WoSCAN within two months of publication of this report.

### Action / Improvement Plan

| | |
|---|---|
| **Area:** | NHS Borders |
| **Action Plan Lead:** | |
| **Date:** | |

| **KEY (Status)** | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 1 | NHS Borders to review patients who were not discussed at an MDT meeting to ensure that this was appropriate and review pathways if required | | | | | | |
| 3 | NHS Borders to review cases where information is not recorded, regarding listing criteria for liver transplant, to ensure patients who should be included in the denominator are being included. | | | | | | |
| 4 | All SCAN Boards to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN. | | | | | | |

## Action / Improvement Plan

| | |
|---|---|
| **Area:** | NHS Dumfries & Galloway |
| **Action Plan Lead:** | |
| **Date:** | |

| **KEY (Status)** | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 1 | NHS Dumfries & Galloway to review patients who were not discussed at an MDT meeting to ensure that this was appropriate and review pathways if required. | | | | | | |
| 4 | All SCAN Boards to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN. | | | | | | |
| 7 | NHS Dumfries & Galloway to review the cases who did not have a histological diagnosis and provide feedback to the NMCN. | | | | | | |

## Action / Improvement Plan

| | |
|---|---|
| **Area:** | NHS Fife |
| **Action Plan Lead:** | |
| **Date:** | |

| **KEY (Status)** | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 1 | NHS Fife to review patients who were not discussed at an MDT meeting to ensure that this was appropriate and review pathways if required | | | | | | |
| 4 | All SCAN Boards to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN. | | | | | | |

## Action / Improvement Plan

| | |
|---|---|
| **Area:** | NHS Grampian |
| **Action Plan Lead:** | |
| **Date:** | |

| KEY (Status) | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 4 | NHS Grampian to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN. | | | | | | |
| 6 | NHS Grampian to review and discuss local diagnostic pathway for pancreatic, duodenal and biliary tract cancers. | | | | | | |
| 10 | Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team. | | | | | | |
| 11 | NOSCAN data from the last 3 years to be reviewed locally to assess the average numbers of resections being carried out per surgeon and feedback results to NMCN. | | | | | | |

## Action / Improvement Plan

| | |
|---|---|
| **Area:** | NHS Greater Glasgow and Clyde |
| **Action Plan Lead:** | |
| **Date:** | |

| **KEY (Status)** | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 1 | NHS GGC to review patients who were not discussed at an MDT meeting to ensure that this was appropriate and review pathways if required | | | | | | |
| 2 | NHS GGC to review cases which did not meet the target for diagnosis and staging of HCC and provide feedback to the NMCN, noting actions required where appropriate. | | | | | | |
| 3 | NHS GGC to review cases which were not referred to SLTU and provide feedback to the NMCN, detailing action to be taken where appropriate. | | | | | | |
| 4 | NHS GGC to review patients who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN. | | | | | | |
| 10 | Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team. | | | | | | |

## Action / Improvement Plan

| | |
|---|---|
| **Area:** | NHS Highland |
| **Action Plan Lead:** | |
| **Date:** | |

| **KEY (Status)** | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 9 | NHS Highland to review cases where surgical resection was not undertaken and feedback to NMCN on results. | | | | | | |
| 10 | Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team. | | | | | | |
| 12 | NOSCAN data from the last 3 years to be reviewed locally to assess the average numbers of resections being carried out per surgeon and feedback results to NMCN. | | | | | | |

## Action / Improvement Plan

| | |
|---|---|
| **Area:** | NHS Lothian |
| **Action Plan Lead:** | |
| **Date:** | |

| **KEY (Status)** | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 1 | NHS Lothian to review regional MDT referral forms again to ascertain whether further amendments could be made to improve available information. | | | | | | |
| 4 | All SCAN Boards to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN. | | | | | | |
| 10 | Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team. | | | | | | |
| 12 | SCAN data from the last 3 years to be reviewed locally to assess the average numbers of resections being carried out per surgeon and feedback results to NMCN. | | | | | | |

## Action / Improvement Plan

| **KEY (Status)** |
|---|

| | |
|---|---|
| **Area:** | NHS Tayside |
| **Action Plan Lead:** | |
| **Date:** | |

| | |
|---|---|
| **1** | **Action fully implemented** |
| **2** | **Action agreed but not yet implemented** |
| **3** | **No action taken (please state reason)** |

| QPI No. | Action Required | Health Board Action Taken | Timescales | | Lead | Progress/Action Status | Status (see Key) |
|---|---|---|---|---|---|---|---|
| | | | Start | End | | | |
| | *Ensure actions mirror those detailed in Audit Report.* | *Detail specific actions that will be taken by the NHS Board.* | *Insert date* | *Insert date* | *Insert name of responsible lead for each specific action.* | *Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.* | *Insert No. from key above.* |
| 4 | NHS Tayside to review patients with HCC who did not receive curative treatment, TACE or SACT and provide feedback on results to NMCN. | | | | | | |
| 8 | NHS Tayside to review cases which did not receive adjuvant chemotherapy and provide feedback to the NMCN. | | | | | | |
| 9 | NHS Tayside to review cases where surgical resection was not undertaken and feedback to NMCN on results. | | | | | | |
| 10 | Surgical centres to review all cases where less than 15 lymph nodes were resected and discuss with pathology team. | | | | | | |
| 12 | NOSCAN data from the last 3 years to be reviewed locally to assess the average numbers of resections being carried out per surgeon and feedback results to NMCN. | | | | | | |