

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

**HepatoPancreatoBiliary Cancers
National Managed Clinical Network**



Audit Report

Report of the 2011 Clinical Audit Data

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CONTENTS

EXECUTIVE SUMMARY	3
1. INTRODUCTION	6
2. BACKGROUND	6
3. METHODOLOGY	9
4. RESULTS AND ACTION REQUIRED	10
4.1 DATA QUALITY	10
4.2 PERFORMANCE AGAINST AGREED QUALITY MEASURES	12
5. CONCLUSIONS	20
ACKNOWLEDGEMENT	21
ABBREVIATIONS	22
REFERENCES	23
APPENDIX: NHS BOARD ACTION PLANS	24

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 2011 through clinical audit data. This disease group does not have NHS Quality Improvement Scotland (QIS) Clinical Standards to report against and the current set of analyses criteria were determined through consultation with key clinical and clinical effectiveness staff throughout the National Managed Clinical Network (NMCN). The National Cancer Quality Steering Group (NCQSG), under the auspices of the Scottish Cancer Taskforce is currently taking forward the development of national Quality Performance Indicators (QPIs) for all cancers which are intended to drive continuous improvement in the quality of patient care. As part of this programme, the development of national QPIs for HPB cancers is now complete with QPIs published on the Healthcare Improvement Scotland (HIS) website.¹ The dataset to support the monitoring and reporting of QPIs was implemented on 1st January 2013 and is available on the Information Services Division (ISD) website.²

Background

HPB cancers are a rare group of cancers. In 2011 the audit identified 1184 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 649 cases. Survival rates for pancreatic cancer remain poor. The incidence of liver cancer is increasing and mortality has significantly increased, especially in males, making liver cancer the ninth most common cause of death from cancer in males.

Below are the five centres carrying out HPB cancer treatment in Scotland. These are considered the centres for specialist treatment, which includes surgery, chemotherapy and radiotherapy. Patients may receive diagnostic and palliative care in their local hospital where appropriate but most patients are referred to one of the five centres for specialist management. Additionally, the Scottish Liver Transplant Centre located in the Royal Infirmary of Edinburgh is responsible for management of all liver transplant cases in Scotland, a treatment sometimes indicated for primary liver cancer.

Centre	Constituent Hospital(s)
Aberdeen	Aberdeen Royal Infirmary (ARI)
Dundee	Ninewells Hospital (NW)
Edinburgh	Royal Infirmary of Edinburgh (RIE - surgery) and Western General Hospital (oncology)
Glasgow	Glasgow Royal Infirmary (GRI - surgery) and Beatson West of Scotland Cancer Centre (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 and 31st December 2011 was downloaded from eCASE on 14th November 2011.

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

Data were submitted by all fourteen Scottish NHS Boards and case ascertainment for patients diagnosed in 2011 is 98% across Scotland indicating generally excellent data capture. Overall data quality and completeness is good however, a few NHS Boards could improve upon the quality of surgical data collected. As HPB services are based around specialist centres, the data are analysed based upon the location of treatment. This can present problems with respect to the data quality where patients have moved between NHS Boards for diagnosis and treatment. The quality and completeness of treatment information requires some improvement where there is cross-boundary movement, especially where the Board of diagnosis and the Board of treatment are not in the same regional area.

Consistently poor data completeness of whether a patient was seen by a Palliative Care Specialist or dietitian and whether patients were entered into a clinical trial has been observed across NHS Boards with no significant improvement over the years. Analyses using these data items cannot provide meaningful results and therefore is not reported.

The data are measured against agreed criteria and results are summarised below. Values represent the overall Scotland result expressed as a percentage and where appropriate the range is also detailed.

1. Proportion of patients discussed at a multidisciplinary team meeting (93 [50-100]%)
2. Proportion of patients in Scotland with a curative care plan intent (17%)
3. Proportion of patients in Scotland with pancreas, duodenum or distal bile duct cancer treated with surgical resection (15%)
4. Proportion of patients who died within thirty days of pancreatic resection (4 [0-9]%)
5. Proportion of pancreatic resection patients who receive adjuvant chemotherapy (38 [14-57]%)

Conclusions and Action Required

Improvements have been observed in recent data and these improvements have facilitated availability of meaningful and useful information to the NMCN regarding service performance and quality. Three years worth of comparative data are now available which has assisted the network in assessing areas for service improvement. While progress is welcomed, it is also recognised that there remains room for further improvement. It is anticipated that these shortcomings will be addressed by the implementation and reporting of QPIs which aim to enable continuous improvement and drive service change.

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

Action Required:

Service Improvement

- The NMCN should work with the Scottish Primary Care Cancer Group (SPCCG) to promote the Royal College of General Practitioners (RCGP) training module within the Primary Care setting with the aim of ensuring more timely progression of patients with HPB cancer into Secondary Care for investigation, diagnosis and treatment consideration.
- NHS Boards should promote awareness of improved management of patients with unexplained weight loss/ persistent vague symptoms to facilitate earlier diagnosis of HPB cancer, working with the SPCCG and the NMCN where appropriate.
- Aberdeen Royal Infirmary should review their cases of post-operative mortality following pancreatic cancer resection on a regular basis and formally report to the NMCN Advisory Board and RCAG on results.
- NOSCAN should review and monitor the sustainability of current service provision within the three centres with consideration given to the notable fluctuations in resection numbers within each centre and the mortality results over consecutive years via the Upper GI/HPB cancer service provision short life working group.
- NMCN to produce a formal report following the Mortality and Morbidity Review Meeting for HPB surgery scheduled for March 2013.
- All surgical centres should review protocols for post-operative referral to oncology to ensure all suitable patients receive adjuvant chemotherapy following pancreatic resection.
- All surgical centres should assess any implications for the future provision of services in their local area with respect to the systemic therapy QPI.

Data Quality Improvement

- NMCN should facilitate information sharing practices between regional networks to ensure data capture of full patient pathway is achieved.
- NHS Boards should encourage liaison and communication between audit staff and clinicians to facilitate high quality data.

A summary of actions for each NHS Board has been included within the Action Plan templates in Appendices I-V.

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.

1. Introduction

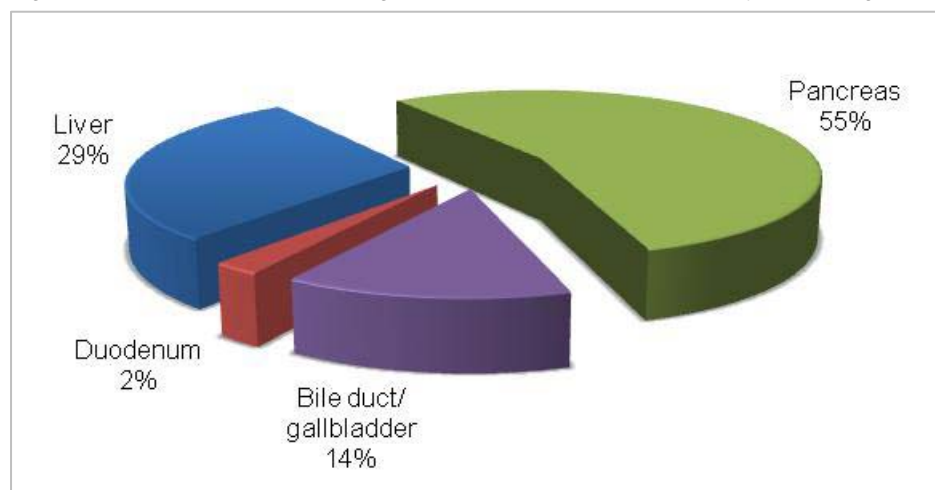
The National Managed Clinical Network (NMCN) for HepatoPancreatoBiliary (HPB) Cancers launched in 2005 with the aim of providing quality and equitable care for all patients in Scotland. The purpose of this report is to present an assessment of performance of HPB Cancer Services relating to patients diagnosed across Scotland during 2011 through clinical audit data. These audit data underpin much of the regional and national development/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 across the country.

This disease group does not have NHS Quality Improvement Scotland (QIS) Clinical Standards to report against and the current set of analyses criteria were determined through consultation with key clinical and clinical effectiveness staff throughout the NMCN. The National Cancer Quality Steering Group (NCQSG), under the auspices of the Scottish Cancer Taskforce (SCT) is currently taking forward the development of Quality Performance Indicators (QPIs) for all cancers which are intended to drive continuous improvement in the quality of patient care. As part of this programme, the development of national QPIs for HPB cancers is now complete with QPIs published on the Healthcare Improvement Scotland (HIS) website.¹ The dataset to support the monitoring and reporting of QPIs was implemented on 1st January 2013 and is available on the Information Services Division (ISD) website.² A national governance and improvement framework is in place to support reporting and progress against the QPIs and this will be overseen by Healthcare Improvement Scotland.^{1(p28)}

2. Background

HPB cancers are a rare group of cancers. In 2011 the audit identified 1184 patients diagnosed with a new primary cancer of the liver, pancreas, bile ducts, gallbladder or duodenum in Scotland. Comparative numbers of breast, colorectal and lung cancers diagnosed in Scotland are much greater with approx 4800, 3800 and 4900 patients diagnosed each year, respectively. Pancreatic cancer accounts for more than half of all HPB cancer diagnoses and Figure 1 illustrates the proportions of each type of HPB cancer diagnosed in Scotland in 2011.

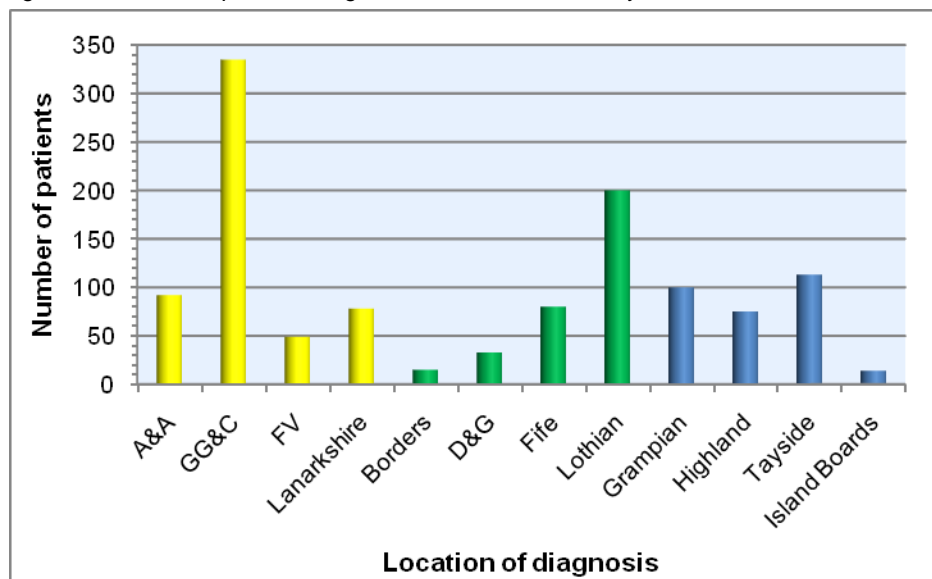
Figure 1: Proportion of patients diagnosed in 2011 with HPB cancer by site of origin of tumour



Site of tumour	Liver	Pancreas	Bile duct/gallbladder	Duodenum	Total
Number of cases	347	649	160	28	1184

The distribution of the 1184 patients diagnosed in 2011 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 554 patients diagnosed in 2011 is the largest of the three regional Cancer Networks in Scotland. In the South East of Scotland Cancer Network (SCAN) and the North of Scotland Cancer Network (NOSCAN), 328 and 302 patients were diagnosed in 2011 respectively. 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 most populous NHS Boards.³

Figure 2: Number of patients diagnosed with HPB cancer by NHS Board in 2011



Board of diagnosis	A&A	GG&C	FV	Lanarkshire
Number of cases	92	335	49	78
Board of diagnosis	Borders	D&G	Fife	Lothian
Number of cases	15	33	80	200
Board of diagnosis	Grampian	Highland	Tayside	Island Boards ¹
Number of cases	100	75	113	14

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 Centre 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 HPB cancer patients in Scotland

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

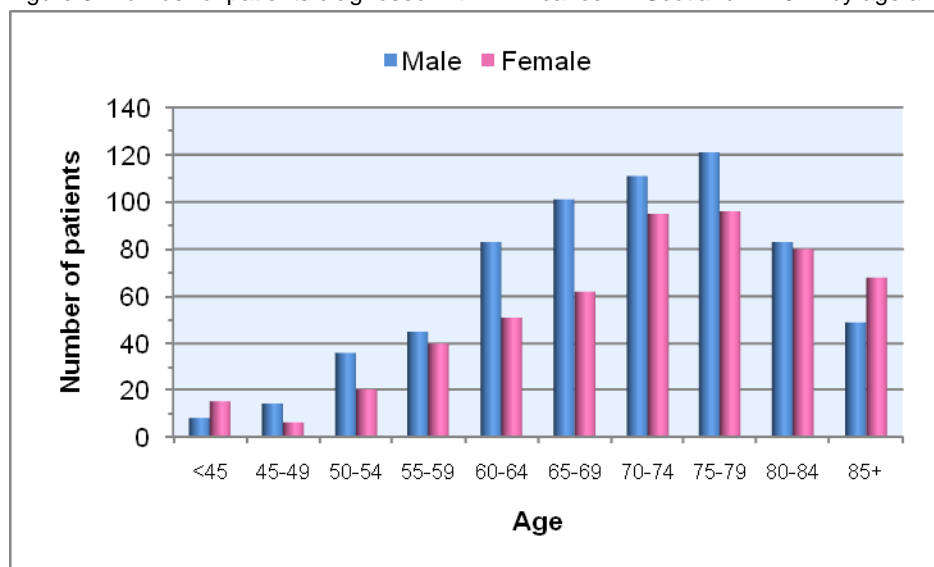
¹ Island NHS Boards include NHS Orkney, NHS Shetland and NHS Western Isles

In Scotland, liver cancer is the thirteenth most common cancer in males and nineteenth in females⁴. The incidence of liver cancer is rising especially in males with increases of 59.4% and 10.3% in males and females respectively in the last decade.⁴ There has been a statistically significant increase in mortality in males from liver cancer with a 45% rise in the last ten years and consequently liver cancer is the now the ninth most common cause of death from cancer in males.⁵

Pancreatic cancer is the eleventh and ninth most common cancer in males and females respectively and in the last ten years there have been small increases in incidence in both sexes.⁶ Whilst rare, pancreatic cancer is the sixth commonest cause of death from cancer.⁵ Pancreatic cancers tend to present at an advanced stage and are less amenable to treatment and resultantly survival is poor. Although there has been a slight improvement in the last twenty years, 1 year relative (age-standardised) survival is 15.9% in males and 18.8% in females.⁷ Five years after diagnosis, survival is 4.3% in males and 3.6% in females and is unchanged over the previous two decades.⁷

HPB cancers occur most frequently later in life. Figure 3 illustrates the number of new cases in 2011 by age and gender. The incidence of HPB cancers is higher in males in all age groups, however, as women live longer than men, the total number of cases diagnosed in women aged 80 years or more is greater than for males. Although the majority of cases do occur in older individuals, it is concerning to observe that 16% of HPB cancers in males and 15% in females were diagnosed in individuals under 60 years of age.

Figure 3: Number of patients diagnosed with HPB cancer in Scotland in 2011 by age and gender



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 and 31st December 2011 was downloaded from eCASE at 2200 hrs on 14th November 2012. 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.

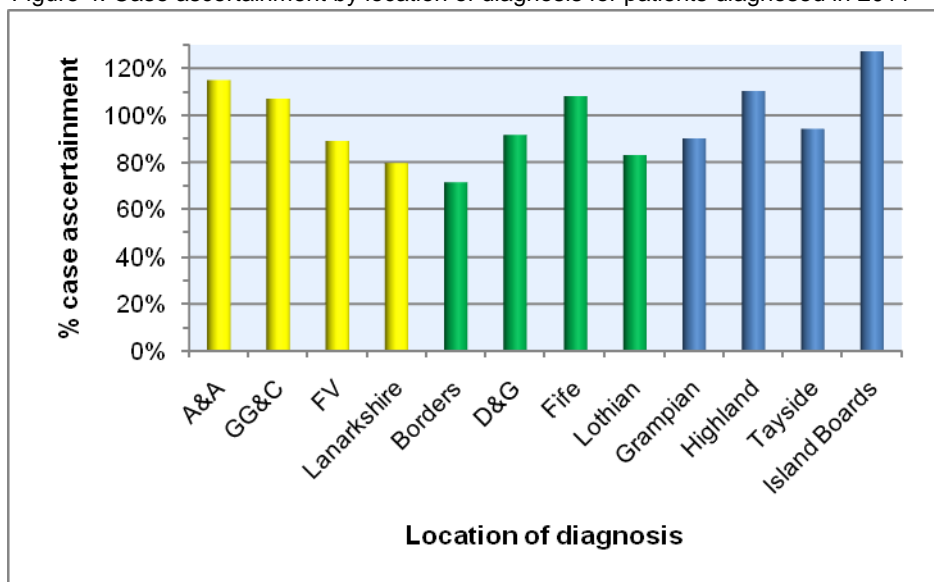
4. Results and Action Required

4.1 Data Quality

Case ascertainment is a method of estimating whether the number of patient records captured through audit reflects the number expected for that cancer and location. It is also required to aid the interpretation of analysis based on cancer audit data, as more complete data will return more reliable results. When the NMCN first analysed HPB audit data in 2007, case ascertainment was low in several areas and results were therefore unreliable. Data collected relating to patients diagnosed in 2009 demonstrated improved case ascertainment however case ascertainment for NHS Ayrshire & Arran data was too low (less than 60%) to include in analyses. A few other NHS Boards could not be included in this cohort for analyses: NHS Dumfries and Galloway and NHS Orkney did not collect the full dataset at this time and NHS Shetland did not have any cases diagnosed in 2009.

Building on the improvement in the first couple of years, data relating to patients diagnosed in 2010 and 2011 has demonstrated considerable improvement. Data were submitted by all fourteen Scottish NHS Boards and an acceptable level of case ascertainment was evident which would allow all data to be analysed and reported. Case ascertainment for patients diagnosed in 2011 is 98% across Scotland which demonstrates an excellent level of data capture. Figure 4 illustrates case ascertainment of over 80% for most Boards and it is recognised that small Boards are likely to see yearly fluctuations in numbers therefore calculated case ascertainment may be an over or under estimation and is not a cause for concern.

Figure 4: Case ascertainment by location of diagnosis for patients diagnosed in 2011



Overall data quality and completeness is good however, some NHS Boards could improve upon the quality of surgical data. As HPB services are based around specialist centres, the data are analysed based upon the location of treatment. This can present problems with respect to the data quality where patients have moved between NHS Boards for diagnosis and treatment. Patients who are treated in an NHS Board other than where they were diagnosed require information relating to their full pathway to be captured and this requires co-operation and liaison between Board staff. The quality and completeness of treatment information requires some improvement where there is cross-boundary movement, especially where the Board of diagnosis and the Board of treatment are not in the same regional area.

Consistently poor data completeness of whether a patient was seen by a Palliative Care Specialist or dietitian and whether patients were entered into a clinical trial has been observed across NHS Boards with no significant improvement over the years. Analyses using these data items cannot provide meaningful results and therefore is not reported.

HPB cancers have poor prognosis and there has been little improvement in survival over the last two decades. Access to clinical trials is an important issue as clinical trials aim to find more effective treatments to improve survival and quality of life. The Scottish Cancer Research Network has provided an overall proportion of HPB patients enrolled into a clinical trial across a year period and this information is presented in previous NMCN Annual Activity Reports. Furthermore, development has commenced on a generic Clinical Trial QPI with work being undertaken, in conjunction with the Scottish Cancer Research Network, to establish the most effective mechanism for data collection and measurement. This is intended to be applied to all tumour types and therefore will include HPB cancers.

There is a recognised association between consistently poor data completeness and audit resource issues within Boards and this must be addressed if clinical audit data is to be of high quality, facilitating measurement of QPIs for HPB which is mandatory practice for NHS Boards as set out in CEL 06 (2012).

Action required:

- NMCN should facilitate information sharing practices between regional networks to ensure data capture of full patient pathway is achieved.
- NHS Boards should encourage liaison and communication between audit staff and clinicians to facilitate high quality data.

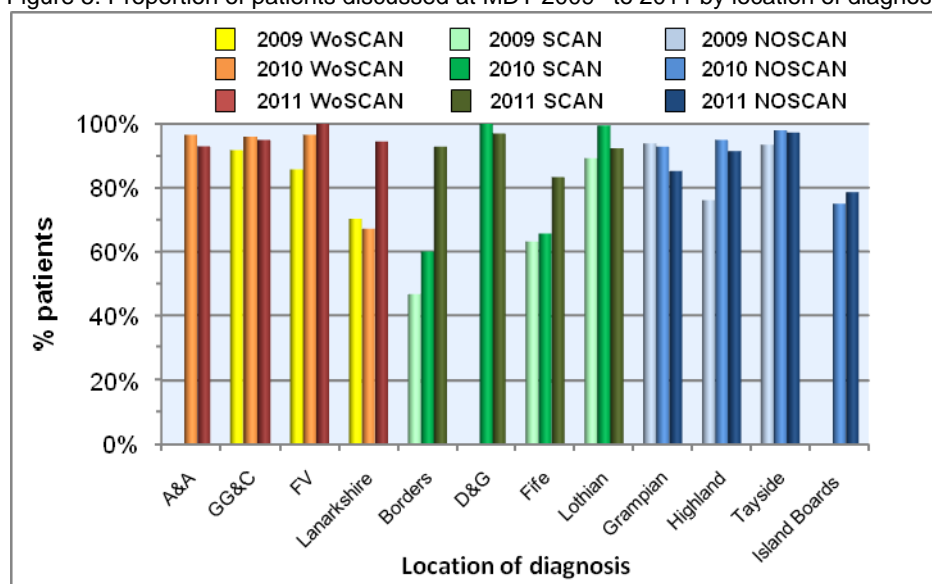
4.2 Performance Against Agreed Quality Measures

4.2.1. Discussed at a Multidisciplinary Team Meeting

Multi-disciplinary team (MDT) meetings have frequently been endorsed as a vital method of including all relevant disciplines and professional groups in decisions relating to the clinical management of cancer patients. Effective MDT working is considered integral to provision of high-quality cancer care, ensuring treatment and care provision is tailored to patient needs.

The proportion of patients diagnosed in Scotland in 2011 discussed at MDT is high at 93%. Figure 5 illustrates that the majority of NHS Boards improved from 2009 to 2010. NHS Lanarkshire, NHS Borders and NHS Fife had low proportions of patients discussed at MDT in both 2009 and 2010 however have demonstrated considerable improvement in 2011. The proportions discussed at a regional level for WoSCAN, SCAN and NOSCAN are 95%, 91% and 91% respectively indicating consistently high achievement.

Figure 5: Proportion of patients discussed at MDT 2009² to 2011 by location of diagnosis



Board of diagnosis	A&A			GG&C			FV			Lanarkshire		
Year of diagnosis	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11
Patients discussed	-	57	79	246	240	283	48	57	47	52	49	69
Total patients included ³	-	59	85	268	250	298	56	59	47	74	73	73

Board of diagnosis	Borders			D&G			Fife			Lothian		
Year of diagnosis	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11
Patients discussed	7	6	13	-	33	32	36	42	65	133	186	182
Total patients included ³	15	10	14	-	33	33	57	64	78	149	187	197

Board of diagnosis	Grampian			Highland			Tayside			Islands		
Year of diagnosis	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11
Patients discussed	92	78	81	54	57	64	72	96	109	-	9	11
Total patients included ³	98	84	95	71	60	70	77	98	112	-	12	14

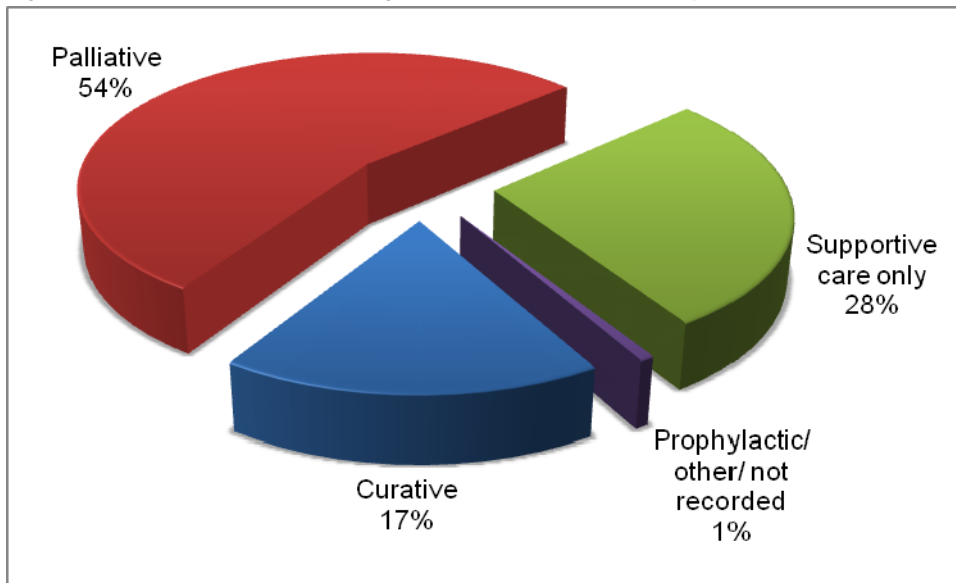
² Reason for missing 2009 A&A, D&G, Orkney and Shetland data is described in section 4.1

³ Patients who died before first treatment are excluded from the total

4.2.2. Care Plan Intent

At initial discussion by the MDT, a care plan is decided based upon information available at that time. Figure 6 indicates that over half of all HPB cancer patients are considered for a palliative care plan at first discussion. A further 28% have supportive care only and only 17% of patients are initially considered for potentially curative treatment. These figures for 2011 are almost identical to those for 2010 indicating that this is an unchanging situation. Of those patients that are considered for curative treatment, a proportion of these will not go on to receive curative treatment as further investigation will indicate that they are not suitable, often due to more advanced disease than initially suspected.

Figure 6: Distribution of patients diagnosed in Scotland in 2011 by care plan intent



The proportion of patients going forward for potentially curative treatment is low however this is expected for these problematic tumours where patients generally present late, at a point where curative treatment is not an option. Earlier diagnosis is desirable but difficult to achieve. The NMCN has recently worked with NHS Boards to agree formal referral pathways and there has been focus on how the time taken from suspected diagnosis to treatment plan could be decreased. Closer scrutiny of this part of the pathway has suggested that there are no delays at this point and that the focus needs to be transferred to the earliest part of the pathway i.e. Primary Care.

By promotion in NHS Boards involving GPs in awareness training in the management of unexplained weight loss and persistent vague symptoms it is anticipated that an impact could be made in expediting the time for patients to reach a diagnosis of an HPB cancer. The Royal College of General Practitioners (RCGP) has launched an online training module entitled "Pancreatic Cancer: Early Diagnosis in General Practice" which is being promoted by the Scottish Primary Care Cancer Group (SPCCG).

Action required:

- a. The NMCN should work with the SPCCG to promote the RCGP training module within the Primary Care setting with the aim of ensuring more timely progression of patients with HPB cancer into Secondary Care for investigation, diagnosis and treatment consideration.
- b. NHS Boards should promote awareness of improved management of patients with unexplained weight loss/ persistent vague symptoms to facilitate earlier diagnosis of HPB cancer, working with the SPCCG and the NMCN where appropriate.

4.2.3. Surgical resection – pancreatic, duodenal and distal bile duct cancers

Surgical resection is an operation that removes part of the pancreas, duodenum or distal bile duct as anti-cancer treatment. The most common resection for pancreatic cancer is a pancreaticoduodenectomy (also known as a Whipple's resection). The resection rate is calculated as the proportion of patients who undergo resection from all patients diagnosed with pancreatic, duodenal or distal bile duct cancer.

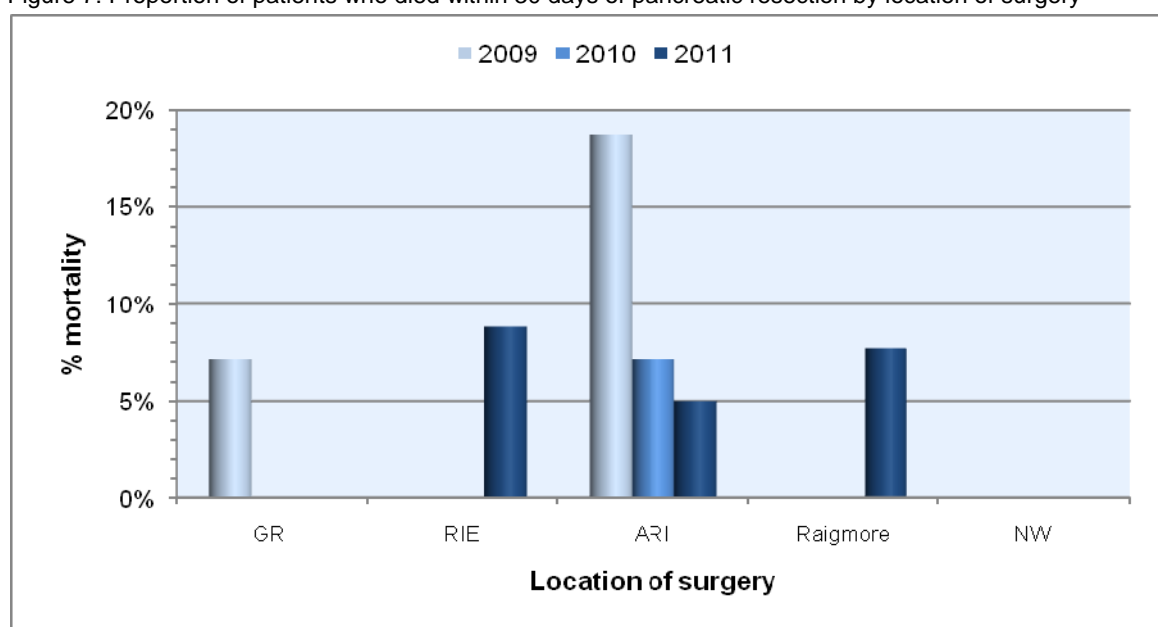
The surgical resection rate for cancers of the pancreas, duodenum or distal bile duct in Scotland was 14.5% in 2011, with 103 out of 710 patients undergoing a resection procedure for their cancer. While this figure is low, it is an increase on the two previous years where the resection rate was 11.7% in 2009, increasing to 13.0% in 2010. The NMCN has already identified as a priority the need to facilitate earlier diagnosis as this may increase access to curative treatment.

4.2.4. Thirty day mortality following resection

There were 29 liver cancer resections for primary cancer carried out on patients diagnosed in 2011 and no deaths occurred within thirty days of surgery. Over 70% of these liver resections were carried out in the Royal Infirmary of Edinburgh. There were no liver resections carried out in Glasgow Royal Infirmary and the remainder of resections were carried out between the three surgical centres in the NoS. Thirty day mortality following liver resection was also 0% in patients diagnosed in 2009 and 2010 representing three successive years of excellent outcomes for liver resectional surgery in Scotland.

Guidelines for the Management of Pancreatic cancers published by each of the three regional cancer networks^{8,9,10} state that “a 30 day in-hospital mortality of less than or equal to 5% should be achievable” following pancreatico-duodenectomy. Across Scotland, thirty day mortality following pancreatic cancer resection was 5% in 2009, 1% in 2010 and 4% in 2011 which is in keeping with the evidence and guidelines.

Figure 7: Proportion of patients who died within 30 days of pancreatic resection by location of surgery



Location	GRI			RIE ⁴			ARI ⁵			Raigmore			NW			Non-specialist			All operations		
Year	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11
Deaths	2	0	0	0	0	3	3	1	1	0	0	1	0	0	0	0	0	0	5	1	5
Total ops	28	32	37	34	37	34	16	14	20	10	3	13	5	10	14	1	0	0	94	96	118

Figure 7 presents the percentage of patients who died within thirty days of pancreatic cancer resection for patients diagnosed in 2009 through to 2011 by location of surgery. Mortality figures are influenced by small numbers and yearly fluctuations and where the proportion of patients who died within thirty days of resectional surgery exceeds 5% for a particular unit in a single year this is not

⁴ One patient diagnosed in 2011 having a pancreatic resection at RIE was recorded as having died within thirty days of surgery. This patient was diagnosed in NHS Forth Valley and the information relating to the surgery was incorrectly completed by NHS Forth Valley. NHS Lothian has confirmed that this patient was alive thirty days post-surgery: this would give a mortality result of 5.9% rather than 8.9% presented.

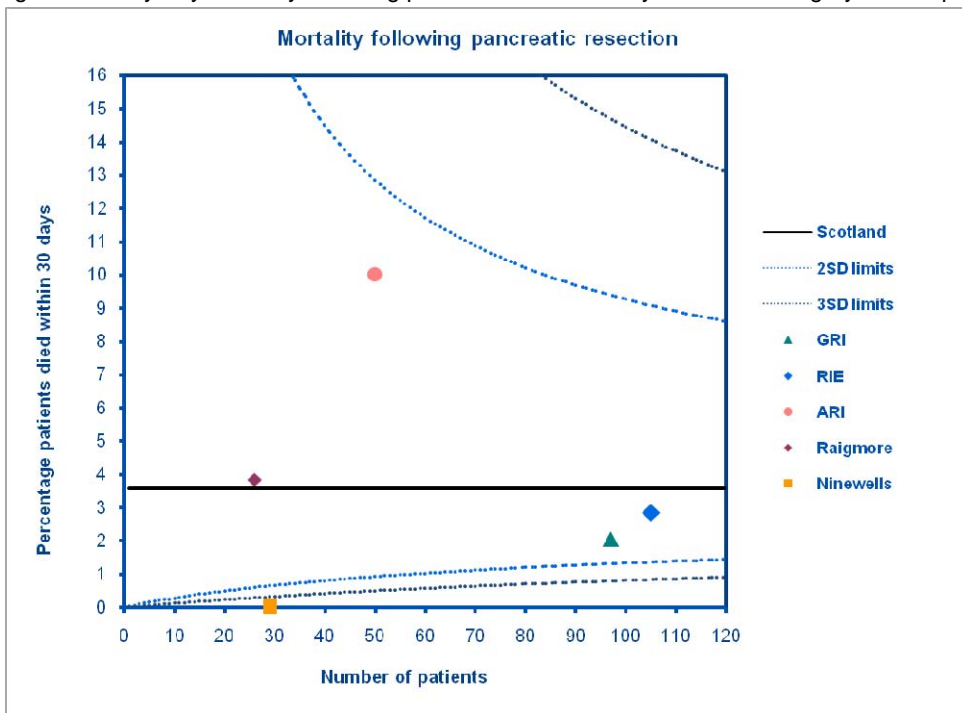
⁵ Subsequent to completion of the analysis and verification process for 2010 data, one patient operated on in Aberdeen Royal Infirmary (ARI) and included in 2010 results was identified as having had a duodenectomy rather than a Pylorus Preserving Pancreaticoduodenectomy as had been recorded. This death should not be counted as a death following pancreatic resection based upon the new information thus the 2010 mortality would be 0% and the 2009-2011 mortality would be 8% rather than 10%.

immediately a cause for concern. Units are expected to review their mortality cases and assess the reasons to establish any issues that may need addressed locally and often cases of post-operative death could not have been avoided.

Aberdeen Royal Infirmary (ARI) has a mortality of 5% or greater for three successive years however as small numbers and random variance can have a significant effect on these proportions, data for the three years 2009 to 2011 have been collated to present a broader picture. Figure 8 presents a funnel plot where the number of resections performed between 2009 and 2011 are plotted against the percentage mortality for each surgical centre. The funnel plot is based upon the average result for Scotland and the solid black horizontal line represents the Scottish average mortality rate (4%). The broken lines represent the 95% (2 Standard Deviations) and 99.8% (3 Standard Deviations) control limits. Units that lie below the lower control limits have significantly better thirty-day post-operative mortality rates than the Scottish average.

The data presented in Figure 8 illustrates that Glasgow Royal Infirmary, Royal Infirmary of Edinburgh and Ninewells Hospital fall below the national average mortality rate. Raigmore Hospital sits just above the national average but is still below 5% mortality over the three years therefore this still represents good performance. Across the three year period, Aberdeen Royal Infirmary has a mortality rate which is considerably above the national average and the 5% guideline level. As the 2009-2011 year mortality falls within the upper control limits in the plot, it is not significantly different from the other centres over the three year period. The mortality for ARI is notably higher than the other four centres however and the relatively high mortality in one relatively low volume centre requires careful monitoring. This has been highlighted to NHS Grampian and additionally, a Mortality and Morbidity Review Meeting for all five centres involved in HPB cancer surgery has been scheduled for March 2013. It is anticipated that local and national review processes should address any difficulties and lead to improvement. Surgical mortality is an area covered by the HPB QPIs and will therefore be continually monitored through the QPI National Governance Framework.¹

Figure 8: Thirty-day mortality following pancreatic resection by location of surgery: funnel plot of 2009-2011 data^{4,5}



From the data table accompanying Figure 7, fluctuations are evident in the number of operations performed in some of the units in NOSCAN. The volume of surgery in NOSCAN was highlighted in

the Report of 2010 Clinical Audit Data. A short life working group (SLWG) has been convened to assess the mid-long term provision for Upper GI and HPB cancer services in the north of Scotland.

The Report of the 2010 Clinical Audit Data published in May 2012 stated that subsequent to completion of the analysis and verification process, one patient operated on in ARI and included in 2009 results was identified as a neuro-endocrine tumour. It was stated that these types of tumours were not eligible for national audit however based upon subsequent guidance from ISD regarding neuro-endocrine tumours this patient should now be considered within the three year mortality rates within this report.

Action required:

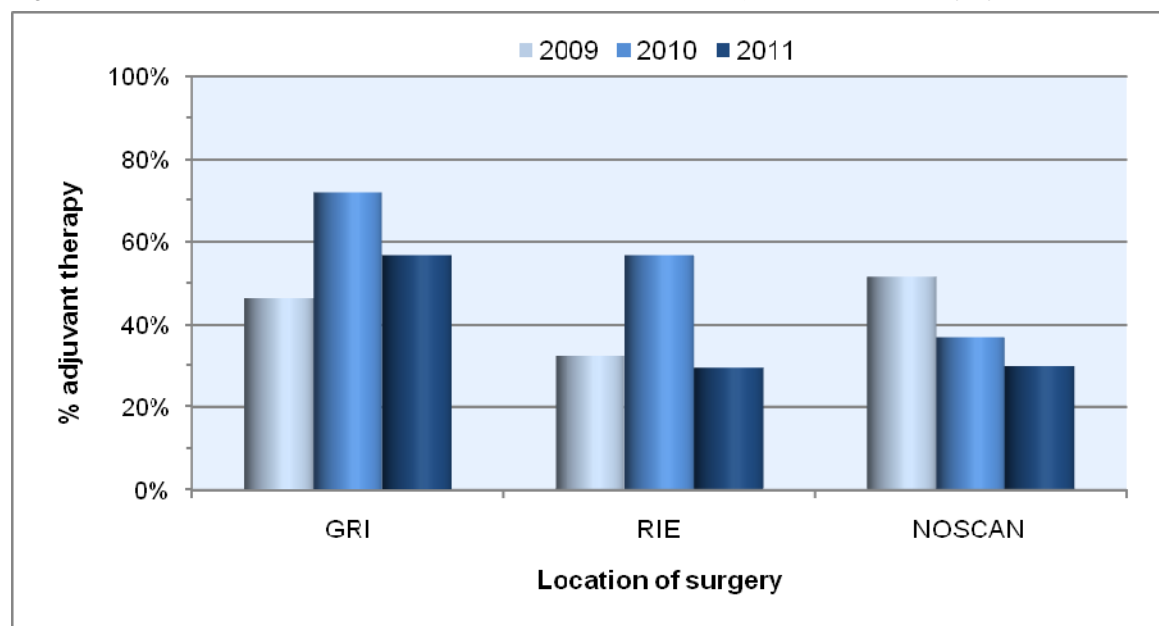
- a. Aberdeen Royal Infirmary should review their cases of post-operative mortality following pancreatic cancer resection on a regular basis and formally report to the NMCN Advisory Board and RCAG on results.
- b. NOSCAN should review and monitor the sustainability of current service provision within the three centres with consideration given to the notable fluctuations in resection numbers within each centre and the mortality results over consecutive years via the SLWG.
- c. NMCN to produce a formal report following the Mortality and Morbidity Review Meeting for HPB surgery scheduled for March 2013.

4.2.5. Adjuvant chemotherapy following pancreatic resection

Patients undergoing pancreatic cancer resection should be considered for adjuvant chemotherapy as there is proven survival advantage.¹¹ This is a topic that has been considered of importance by the HPB QPI development group and is resultantly addressed by a QPI for HPB cancer.¹

Figure 9 illustrates the proportion of pancreatic cancer resection patients who went on to receive adjuvant chemotherapy. Results for Aberdeen Royal Infirmary, Raigmore Hospital and Ninewells Hospital are presented as combined NOSCAN results in Figure 9 due to the small numbers involved. The individual hospital results are detailed in the accompanying data table.

Figure 9: Proportion of pancreatic resection patients who received adjuvant chemotherapy by location of surgery



Location	GRI			RIE ⁶			ARI			Raigmore			NW			Non-specialist			All operations		
Year	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11	'09	'10	'11
N	13	23	21	10	21	10	4	6	8	8	2	4	4	2	2	2	0	0	41	54	45
D	28	32	37	31	37	34	16	14	20	10	3	13	5	10	14	4	0	0	94	96	118

N: numerator (number of patients receiving adjuvant chemotherapy) D: denominator (number of patients undergoing pancreatic resection)

Proportions receiving adjuvant chemotherapy fluctuated between 2009 and 2011 in WoSCAN and SCAN however a yearly decrease is evident in NOSCAN from 2009 to 2011. Generally adjuvant chemotherapy rates are low and there is marked variation between centres. Adjuvant chemotherapy is associated with significant survival advantages and therefore improving this figure is desirable. The importance of this topic was recognised during the development process for national QPIs for HPB cancer and resultantly this has formed the basis of a QPI.¹

It should be noted that measurability of the QPI on this topic will not be directly comparable to these results however this gives a broad indication of where service provision may need to be addressed.

⁶ One patient diagnosed in 2011 having a pancreatic resection at RIE did not have data recorded on whether adjuvant chemotherapy was received. This patient was diagnosed in NHS Forth Valley and the information relating to chemotherapy had not been completed by the board. NHS Lothian has confirmed that this patient did have adjuvant chemotherapy and thus the numerator should be 11, resulting in 32.3% rather than 29.4% presented.

Action required:

- a. All surgical centres should review protocols for post-operative referral to oncology to ensure all suitable patients are considered for chemotherapy.
- b. All surgical centres should assess any implications for the future provision of services in their local area with respect to the systemic therapy QPI.

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. It has been an aim of the Scottish HepatoPancreatoBiliary Cancer NMCN to improve quality and completeness of clinical audit data to ensure that robust performance assessment can take place. Improvements have been observed in recent data and these improvements have facilitated availability of meaningful and useful information to the NMCN regarding service performance and quality. Three years worth of comparative data are now available which has assisted the network in assessing areas for service improvement.

While progress is welcomed, it is also recognised that there remains room for further improvement. It is anticipated that these shortcomings will be addressed by the implementation and reporting of QPIs which aim to enable continuous improvement and drive service change, where appropriate, by focussing on areas of key clinical importance which make a difference to patient outcome and experience. The QPIs are evidence based, outcome focussed and measurable and were developed by a multidisciplinary group. The dataset aligned to measurement and reporting of the QPIs was implemented in January 2013 for all patients diagnosed from the start of the year.

There are a number of actions required as a consequence of this assessment of performance against the agreed criteria. Some of these relate to a continued commitment to data quality improvement. Additional actions relating to service provision were identified particularly in relation to variance in surgical outcomes and access to adjuvant therapy.

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. A summary of actions for each NHS Board has been included within the Action Plan templates in Appendices I-V.

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

A&A	NHS Ayrshire & Arran
ARI	Aberdeen Royal Infirmary
BWoSCC	Beatson West of Scotland Cancer Centre
D&G	NHS Dumfries & Galloway
eCASE	Electronic Cancer Audit Support Environment
FV	NHS Forth Valley
GG&C	NHS Greater Glasgow and Clyde
GRI	Glasgow Royal Infirmary
ISD	Information Services Division
HIS	Healthcare Improvement Scotland
HPB	HepatoPancreatoBiliary
MCN	Managed Clinical Network
MDT	Multidisciplinary Team
NCQSG	National Cancer Quality Steering Group
NMCN	National Managed Clinical Network
NOSCAN	North of Scotland Cancer Network
NW	Ninewells Hospital
QIS	Quality Improvement Scotland
QPI	Quality Performance Indicator
RCAG	Regional Cancer Advisory Group
RCGP	Royal College of General Practitioners
RIE	Royal Infirmary of Edinburgh
SCAN	South East Scotland Cancer Network
SCT	Scottish Cancer Taskforce
SLWG	Short life working group
SPCCG	Scottish Primary Care Cancer Group
WoSCAN	West of Scotland Cancer Network

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Appendix: NHS Board Action Plans

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

Appendix I

Action / Improvement Plan

National MCN:	HPB NMCN
Action Plan Lead:	Colin J McKay
Date:	

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

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
	<i>Ensure actions mirror those detailed in Audit Report.</i>	<i>Detail specific actions that will be taken by the NHS Board.</i>	<i>Insert date</i>	<i>Insert date</i>	<i>Insert name of responsible lead for each specific action.</i>	<i>Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.</i>	<i>Insert No. from key above</i>
1.	The NMCN should work with the SPCCG to promote the RCGP training module within the Primary Care setting with the aim of ensuring more timely progression of patients with HPB cancer into Secondary Care for investigation, diagnosis and treatment consideration.						
2.	NMCN should facilitate information sharing practices between regional networks to ensure data capture of full patient pathway is achieved.						
3.	NMCN to produce a formal report following the Mortality and Morbidity Review Meeting for HPB surgery scheduled for March 2013.						

Appendix II

Action / Improvement Plan

NHS Board(s):	WoSCAN NHS Boards
Action Plan Lead:	
Date:	

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

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
	<i>Ensure actions mirror those detailed in Audit Report.</i>	<i>Detail specific actions that will be taken by the NHS Board.</i>	<i>Insert date</i>	<i>Insert date</i>	<i>Insert name of responsible lead for each specific action.</i>	<i>Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.</i>	<i>Insert No. from key above</i>
1.	NHS Boards should promote awareness of improved management of patients with unexplained weight loss/ persistent vague symptoms to facilitate earlier diagnosis of HPB cancer, working with the SPCCG and the NMCN where appropriate.						
2.	All surgical centres should review protocols for post-operative referral to oncology to ensure all suitable patients receive adjuvant chemotherapy following pancreatic resection.						

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
3.	All surgical centres should assess any implications for the future provision of services in their local area with respect to the systemic therapy QPI.						
4.	NHS Boards should encourage liaison and communication between audit staff and clinicians to facilitate high quality data.						

Appendix III

Action / Improvement Plan

NHS Board(s):	SCAN NHS Boards
Action Plan Lead:	
Date:	

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

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
	<i>Ensure actions mirror those detailed in Audit Report.</i>	<i>Detail specific actions that will be taken by the NHS Board.</i>	<i>Insert date</i>	<i>Insert date</i>	<i>Insert name of responsible lead for each specific action.</i>	<i>Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.</i>	<i>Insert No. from key above</i>
1.	NHS Boards should promote awareness of improved management of patients with unexplained weight loss/ persistent vague symptoms to facilitate earlier diagnosis of HPB cancer, working with the SPCCG and the NMCN where appropriate.						
2.	All surgical centres should review protocols for post-operative referral to oncology to ensure all suitable patients receive adjuvant chemotherapy following pancreatic resection.						
3.	All surgical centres should assess any implications for the future provision of services in their local area with respect to the systemic therapy QPI.						

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
4.	NHS Boards should encourage liaison and communication between audit staff and clinicians to facilitate high quality data.						

Appendix IV

Action / Improvement Plan

NHS Board(s):	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)

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
	<i>Ensure actions mirror those detailed in Audit Report.</i>	<i>Detail specific actions that will be taken by the NHS Board.</i>	<i>Insert date</i>	<i>Insert date</i>	<i>Insert name of responsible lead for each specific action.</i>	<i>Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.</i>	<i>Insert No. from key above</i>
1.	Aberdeen Royal Infirmary should review their cases of post-operative mortality following pancreatic cancer resection on a regular basis and formally report to the NMCN Advisory Board and RCAG on results.						
2.	NOSCAN should review and monitor the sustainability of current service provision within the three centres with consideration given to the notable fluctuations in resection numbers within each centre and the mortality results over consecutive years via the SLWG.						
3.	NHS Boards should promote awareness of improved management of patients with unexplained weight loss/persistent vague symptoms to facilitate earlier diagnosis of HPB						

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
	cancer, working with the SPCCG and the NMCN where appropriate.						
4.	All surgical centres should review protocols for post-operative referral to oncology to ensure all suitable patients receive adjuvant chemotherapy following pancreatic resection.						
5.	All surgical centres should assess any implications for the future provision of services in their local area with respect to the systemic therapy QPI.						
6.	NHS Boards should encourage liaison and communication between audit staff and clinicians to facilitate high quality data.						

Appendix V

Action / Improvement Plan

NHS Board(s):	NOSCAN Boards (excl 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)

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
	<i>Ensure actions mirror those detailed in Audit Report.</i>	<i>Detail specific actions that will be taken by the NHS Board.</i>	<i>Insert date</i>	<i>Insert date</i>	<i>Insert name of responsible lead for each specific action.</i>	<i>Provide detail of action in progress, change in practices, problems encountered or reasons why no action taken.</i>	<i>Insert No. from key above</i>
1.	NOSCAN should review and monitor the sustainability of current service provision within the three centres with consideration given to the notable fluctuations in resection numbers within each centre and the mortality results over consecutive years via the SLWG.						
2.	NHS Boards should promote awareness of improved management of patients with unexplained weight loss/persistent vague symptoms to facilitate earlier diagnosis of HPB cancer, working with the SPCCG and the NMCN where appropriate.						

No	Action Required	Health Board Action Taken	Timescales		Lead	Progress/Action Status	Status (see key)
			Start	End			
3.	All surgical centres should review protocols for post-operative referral to oncology to ensure all suitable patients receive adjuvant chemotherapy following pancreatic resection.						
4.	All surgical centres should assess any implications for the future provision of services in their local area with respect to the systemic therapy QPI.						
5.	NHS Boards should encourage liaison and communication between audit staff and clinicians to facilitate high quality data.						