National Cancer Recovery Group
National Cancer Quality Steering Group

HepatoPancreatoBiliary Cancer Clinical Quality Performance Indicators

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Revision History

Version	Date	Summary of Changes
V1.0	August 2012	Initial publication
V2.0	November 2013	Addition of QPI 1 – Multidisciplinary Team (MDT) Meeting
V2.1	December 2014	Baseline review changes
V3.0	May 2017	Formal review changes (1st Cycle)
V4.0	May 2020	Formal review changes (2nd Cycle)
V5.0	January 2023	Formal review changes (3rd Cycle)

Contents Update Record

January 2023 (v5.0)
This document was updated following formal review (3rd cycle) of the Hepatopancreatobiliary (HPB) Cancer Quality Performance Indicators (QPIs) which took place following analysis of year 9 of the HPB cancer QPI data.

The following QPIs have been archived*:

- QPI 13 – Clinical Trial & Research Study Access
- QPI 14 – 30 Day Mortality following Systemic Anti-Cancer Therapy (SACT)

***** These important indictors will continue to be monitored via other national reporting systems rather than through the QPI process.

As a result of the changes above, the contents page and page numbering differ from earlier versions of this document. Sections 1-11 and the appendices have also been updated.

Please note that this version of the HPB Cancer QPI Document applies to cases diagnosed from 1st January 2022 onwards.

Previous Updates:

May 2020 (v4.0)
This document was updated following formal review (2nd cycle) of the Hepatopancreatobiliary (HPB) Cancer Quality Performance Indicators (QPIs) which took place following analysis of year 6 of the HPB cancer QPI data.

<u>The following QPIs have been updated:</u>

- QPI 2 - Diagnosis and Staging of HCC
- QPI 5 - 30 and 90 Day Mortality After Curative or Palliative Treatment
- QPI 6 - Radiological Diagnosis of Pancreatic, Duodenal or Biliary Tract Cancer
- QPI 7 - Pathological Diagnosis of Pancreatic, Duodenal or Biliary Tract Cancer
- QPI 11 - 30 and 90 Day Mortality Following Surgical Resection for Pancreatic, Duodenal or Biliary Tract Cancer
- QPI 13 – Clinical Trial and Research Study Access

<u>The following QPIs have been archived:</u>

- QPI 8 - Systemic Therapy for Pancreatic Cancer
- QPI 9 - Resection Rate for Pancreatic, Duodenal or Biliary Tract Cancer

The following new QPIs have been added:

- QPI 14 – 30 Day Mortality Following SACT
- QPI 15 – Access to Oncology Services for Inoperable Pancreatic, Duodenal or Biliary Tract Cancer
- QPI 16 – Key Worker
- QPI 17 – 30 and 90 Day Mortality following Treatment for Colorectal Liver Metastases

Please note the revised Clinical Trials and Research Study Access QPI has also been added (see QPI 13: Clinical Trials and Research Study Access).

As a result of the changes above, the contents page and page numbering differ from earlier versions of this document. Sections 1 – 11 and the appendices have also been updated.

Please note that this version of the HPB Cancer QPI Document applies to cases diagnosed from 1st January 2019 onwards. Where amended or new QPIs require new data items for measurement, this will apply for patients diagnosed from 1st January 2020.

May 2017 (v3.0)
This document was updated following formal review of the Hepatopancreatobiliary (HPB) Cancer Quality Performance Indicators (QPIs) which took place following analysis of year 3 of the HPB cancer QPI data.

The following QPIs have been updated:

- QPI 2 - Diagnosis and Staging of HCC
- QPI 3 - Referral to Scottish Liver Transplant Unit
- QPI 4 - Palliative Treatment for HCC
- QPI 5 - 30 and 90 Day Mortality After Curative or Palliative Treatment
- QPI 7 - Pathological Diagnosis of Pancreatic, Duodenal or Biliary Tract Cancer
- QPI 8 - Systemic Therapy for Pancreatic Cancer
- QPI 10 - Lymph Node Yield
- QPI 11 - 30 and 90 Day Mortality After Treatment with Curative Intent

Please note the extant Clinical Trials has now been added into each tumour specific QPI document (see QPI 13: Clinical Trials).

As a result of the changes above, the contents page and page numbering differ from earlier version of this document. Sections 1 - 10 and the appendices have also been updated.

Please note that this version of the HPB Cancer QPI Document applies to cases diagnosed from 1st January 2016 onwards. Where amended or new QPIs require new data items for measurement, this will apply for patients diagnosed from 1st January 2017.

February 2015 (v2.1)
This document was updated following baseline review of the HPB Cancer QPIs which took place following analysis of year 1 of the HPB cancer QPI data. As a result, the following QPIs have been updated:

- QPI 2 – Diagnosis and Staging of HCC
- QPI 3 – Referral to Scottish Liver Transplant Unit
- QPI 4 – Palliative Treatment for HCC

- QPI 5 – 30 Day Mortality After Treatment for HCC Cancers
- QPI 6 – Radiological Diagnosis for Pancreatic, Duodenal or Biliary Tract Cancers
- QPI 10 – Lymph Node Yield
- QPI 12 – Volume of Cases per Centre/ Surgeon

Please note that this version of the HPB Cancer QPI Document applies to cases diagnosed from 1st January 2014.

November 2013
Please note that this document has been updated to include QPI 1 – Multi-Disciplinary Team (MDT) Meeting.

The overall QPI numbering, contents page and page numbering have been amended as a result and therefore differ from earlier versions of this document.

Contents Page

1. National Cancer Quality Programme

Better Cancer: Ambition and Action (2016)[1] details a commitment to delivering the National Cancer Quality Programme across NHS Scotland, with a recognised need for national cancer QPIs to support a culture of continuous quality improvement. Addressing variation in the quality of cancer services is pivotal to delivering improvements in quality of care. This is best achieved if there is consensus and clear indicators of what good cancer care looks like.

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

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

1.1 Quality Assurance and Continuous Quality Improvement

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

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

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

2. Quality Performance Indicator Development Process

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

The HPB Cancer QPI Development Group was convened in June 2011, chaired by Dr Jennifer Armstrong (Senior Medical Officer, Scottish Government). Membership of this group included clinical representatives drawn from the three regional cancer networks, Healthcare Improvement Scotland, ISD and patient/carer representatives.

The development process and membership of the development group can be found in appendix 1.

3. QPI Formal Review Process

As part of the National Cancer Quality Programme, a systematic rolling programme of national review has been developed. This ensures all tumour specific QPIs are subject to formal review following every 3rd year of comparative QPI data analysis.

The formal review process is clinically driven with proposals for change sought from specialty specific representatives in each of the Regional Cancer Networks. It is designed to be flexible in terms of the extent of review required with tumour specific Regional Clinical Leads undertaking a key role in this decision making. Formal review meetings to further discuss proposals are arranged where deemed necessary. The review builds on existing evidence using expert clinical opinion to identify where new evidence is available, and a full public engagement exercise will take place where significant revisions have been made or new QPIs developed.

During formal review QPIs may be archived and replaced with new QPIs. Triggers for doing so include significant change to clinical practice, targets being consistently met by all Boards, and publication of new evidence. Where QPIs have been archived, associated data items will continue to be collected where these are utilised for other indicators, or measures such as survival analysis.

Any new QPIs are developed in line with the following criteria:

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

Three formal reviews of the HPB Cancer QPIs have been undertaken to date. Further information can be found in appendix 2.

4. Format of the Quality Performance Indicators

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

- Each QPI has a **short title** which will be utilised in reports as well as a fuller **description** which explains exactly what the indicator is measuring.
- This is followed by a brief overview of the **evidence base and rationale** which explains why the development of this indicator was important.
- The measurability **specifications** are then detailed; these highlight how the indicator will actually be measured in practice to allow for comparison across NHS Scotland.
- Finally a **target** is indicated, which dictates the level each unit should be aiming to achieve against each indicator.

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

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

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

5. Supporting Documentation

A national minimum core dataset and a measurability specification have been developed in parallel with the indicators to support the monitoring and reporting of the HPB Cancer QPIs. The latest version of these documents can be found at:

Public Health Scotland Cancer Audit

6. Quality Performance Indicators for HPB Cancer

QPI 1 – Multi-Disciplinary Team (MDT) Meeting

QPI Title:	Patients with HepatoPancreatoBiliary (HPB) Cancer should be discussed by a multidisciplinary team prior to definitive treatment.
Description:	Proportion of patients with HPB cancer who are discussed at MDT meeting before definitive treatment.
Rationale and Evidence:	Evidence suggests that patients with cancer managed by a multi-disciplinary team have a better outcome. There is also evidence that the multidisciplinary management of patients increases their overall satisfaction with their care[2]. Discussion prior to definitive treatment decisions being made provides reassurance that patients are being managed appropriately.
Specifications:	**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% The tolerance within this target is designed to account for situations where patients require treatment urgently.

QPI 2 – Diagnosis and Staging of HCC

QPI Title:	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) prior to first treatment with full information recorded* and are assigned a Barcelona Clinic Liver Cancer (BCLC) Score. **Please note:** The specifications of this QPI are separated to ensure clear measurement of patients undergoing: (i) CT or MRI; (ii) CT or MRI with full information recorded; and (iii) CT or MRI who are assigned a BCLC Score.	
Rationale and Evidence:	Management of HCC is determined by both the stage of HCC and presence/severity of underlying chronic liver disease. Complete information is required to enable correct management decisions to be made by the Multi-Disciplinary Team (MDT). Staging systems such as the Barcelona Clinic Liver Cancer (BCLC) score are used to predict the prognosis of patients with cancer and to assist in the treatment decision making process. The BCLC score is a validated system that has been universally adopted throughout Western countries[3,4]. The availability of this staging score will assist in evaluation of national outcomes. Treatment options for patients with liver cancer are dependant on numerous factors, including the location, number and size of tumour(s)[5]. CT or MRI is the recommended imaging technique for the diagnosis of hepatocellular carcinoma[6].	
Specification (i):	**Numerator:**	Number of patients with HCC undergoing either CT or MRI prior to first treatment.
	Denominator:	All patients with HCC.
	Exclusions:	• No exclusions.
Specification (ii):	**Numerator:**	Number of patients with HCC undergoing either CT or MRI prior to first treatment, and with full information recorded*.
	Denominator:	All patients with HCC.
	Exclusions:	• No exclusions.

(Continued overleaf…..)

QPI 2 – Diagnosis and Staging of HCC (continued…..)

Specification (iii):	**Numerator:**	Number of patients with HCC undergoing either CT or MRI prior to first treatment who are assigned a BCLC Score.
	Denominator:	All patients with HCC.
	Exclusions:	• No exclusions.
Target:	90% This target accounts for the fact that some patients may have significant co-morbidities or may not be fit for investigation and/or treatment.	

* Full information requires the following to be recorded:
- No. of liver lesions
- Size of largest liver lesion
- Presence or absence of vascular invasion
- Presence or absence of chronic liver disease
- Cause of chronic liver disease
- Childs Pugh severity of chronic liver disease
- Alpha-Fetoprotein Quantification (AFP)

QPI 3 – Referral to Scottish Liver Transplant Unit

QPI Title:	Patients with early Hepatocellular Carcinoma (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 Scottish Liver Transplant Unit (SLTU) for consideration of liver transplantation.	
Rationale and Evidence:	Liver transplantation is associated with good long term outcome in selected patients with HCC[7,8]. All patients with early HCC should be considered for liver transplantation and there should be equity of access to liver transplantation across Scotland. Current UK listing criteria, as defined by NHS Blood and Transplant (NHSBT), are based on the "Milan criteria" which are well validated selection criteria for liver transplantation in patients with HCC. Liver transplantation should be considered for all patients with HCC meeting the criteria. Failure to consider liver transplantation where appropriate may result in inequity of access to a successful therapeutic option[6,8].	
Specifications:	**Numerator:**	Number of patients with HCC meeting UK listing criteria that are referred to SLTU.
	Denominator:	All patients with HCC meeting UK listing criteria (as defined by NHSBT)*.
	Exclusions:	• Patients who refuse treatment. • Patients with evidence of vascular invasion. • Patients with extrahepatic disease.
Target:	90% This target accounts for the fact that for some patients it may not be appropriate for referral to the SLTU, due to factors of patient fitness.	

* Current UK listing criteria are:
- Single tumour ≤5cms diameter
- Up to 5 tumours all ≤3cms
- Single tumour 5-7cms which shows no significant progression over 6 months

QPI 4 – Palliative Treatment for HCC

QPI Title:	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), Systemic Anti Cancer Therapy (SACT) or radiotherapy).
Rationale and Evidence:	TACE and SACT 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[7]. TACE is recommended as treatment for patients with inoperable advanced HCC, with chronic liver disease of Child's-Pugh grade A and B[6,7]. Radiotherapy has also shown positive results on tumour control and survival either alone or in combination with other therapies. It is also an effective option for patients not suitable for curative treatments[9].
Specifications:	**Numerator:** Number of patients with HCC not undergoing treatment with curative intent who receive TACE, SACT or radiotherapy. **Denominator:** All patients with HCC not undergoing treatment with curative intent (liver transplantation, resection or ablative therapies). **Exclusions:** • Patients with decompensated chronic liver disease (Child's Pugh Grade C). • Patients who refuse treatment.
Target:	40% This target accounts for the fact that some patients may have significant co-morbidities or fitness level which means that TACE, SACT or radiotherapy is not appropriate. Additionally, this tolerance accounts for patients where synthetic function is not adequate to receive treatment. **Please note:** In order to ensure that the chosen target level is the most appropriate and drives continuous quality improvement as intended it will be kept under review and revised as necessary.

QPI 5 – 30 and 90 Day Mortality after Curative or Palliative Treatment for HCC

QPI Title:	30 and 90 day mortality following treatment for Hepatocellular Carcinoma (HCC) with either curative or palliative intent.	
Description:	Proportion of patients with HCC undergoing disease specific treatment, either curative (liver transplantation, resection or ablation) or palliative (Trans-arterial chemoembolisation (TACE)) who die within 30 or 90 days of definitive treatment. **Please note:** The specifications of this QPI are separated to ensure clear measurement of both: (i) Patients who die within 30 days of definitive treatment (with curative or palliative intent); and (ii) Patients who die within 90 days of treatment with curative intent.	
Rationale and Evidence:	Disease specific interventions for HCC are delivered with either curative (liver transplantation, resection or ablation) or palliative (TACE) intent. In either case treatments should be performed safely with low rates of mortality. Similarly, disease specific treatment should only be undertaken in individuals that may benefit from treatment, that is, disease specific treatments should not be undertaken in futile situations. Treatment related mortality is a marker of the quality and safety of the whole service provided by the Multi Disciplinary Team (MDT)[10]. **Please note:** 30 Day Mortality following Systemic Anti-Cancer Therapy (SACT) will be measured separately from the QPI process. National SACT data from CEPAS (Chemotherapy Electronic Prescribing and Administration System) will be utilised to support reporting and monitoring of this measure rather than clinical audit. This methodology will allow all hepatopancreatobiliary cancer patients undergoing SACT to be captured rather than only those newly diagnosed within the audit.	
Specification (i):	**Numerator:**	Number of patients with HCC undergoing disease specific treatment (liver transplant, resection, ablation, or TACE) that die within 30 days of definitive treatment.
	Denominator:	All patients with HCC undergoing disease specific treatment (liver transplant, resection, ablation, or TACE).
	Exclusions:	• No exclusions.

(Continued overleaf…..)

QPI 5 – 30 and 90 Day Mortality after Curative or Palliative Treatment for HCC (continued…..)

Specification (ii):	**Numerator:**	Number of patients with HCC undergoing disease specific treatment with curative intent (liver transplant, resection, or ablation) that die within 90 days of definitive treatment.
	Denominator:	All patients with HCC undergoing disease specific treatment with curative intent (liver transplant, resection, or ablation).
	Exclusions	• No exclusions.
	Please Note:	This indicator will be reported by principal treatment modality, in the following hierarchy: liver transplant, resection, ablation, or TACE.
Target:	Curative 30 days - <5%, 90 days - <7.5% Palliative 30 days - <10%	

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

QPI Title:	Patients with pancreatic, duodenal or biliary tract cancers should undergo computerised tomography (CT) of the abdomen to evaluate the extent of disease.
Description:	Proportion of patients with pancreatic, duodenal or biliary tract cancer who undergo CT of the abdomen prior to first treatment.
Rationale and Evidence:	Accurate staging is important to ensure appropriate treatment is delivered and futile interventions avoided. 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[11]. It is acknowledged that a number of patients will undergo CT of the chest and pelvis in addition to abdominal CT. Measurement of this QPI focusses only on CT abdomen in order to avoid unnecessary additional imaging where it will have no impact on patient management.
Specifications:	**Numerator:** Number of patients with pancreatic, duodenal or biliary tract cancer who undergo CT of the abdomen prior to first treatment. **Denominator:** All patients with pancreatic, duodenal or biliary tract cancer. **Exclusions:** • No exclusions.
Target:	95% This target accounts for factors of patient choice.

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

QPI Title:	Patients with pancreatic, duodenal or distal biliary tract cancers having non-surgical treatment should have a cytological or histological diagnosis.	
Description:	Proportion of patients with pancreatic, duodenal or distal biliary tract cancer undergoing non-surgical treatment who have a cytological or histological diagnosis.	
Rationale and Evidence:	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[11]. 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.	
Specifications:	**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 cancer undergoing non-surgical treatment.
	Exclusions:	• No exclusions.
Target:	90% This target takes account of the fact that 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. In addition, it is intended to reflect factors relating to patient choice.	

QPI 10 – Lymph Node Yield

QPI Title:	In patients undergoing surgery for pancreatic, duodenal or distal biliary tract cancer the number of lymph nodes examined should be maximised.
Description:	Average number of lymph nodes resected and pathologically examined per patient with pancreatic, duodenal or distal biliary tract cancer who undergo pancreatoduodenectomy performed by a specialist centre, over a 1 year period.
Rationale and Evidence:	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. Evidence suggests that pancreatoduodenectomy should yield a mean of at least 15 lymph nodes examined from the principal specimen[12]. 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 NHSScotland.
Specifications:	Average number of lymph nodes resected and pathologically examined per patient with pancreatic, duodenal or distal biliary tract cancer who undergo pancreatoduodenectomy by each centre in a given year. **Exclusions:** • No exclusions.
Target:	Average of 15 lymph nodes per patient for each centre. An average number is used rather than a minimum within this target as it is recognised that there may be cases where the surgery produces a smaller bulk of tissue and therefore less lymph nodes as a result.

QPI 11 – 30 and 90 Day Mortality Following Surgical Resection for Pancreatic, Duodenal or Distal Biliary Tract Cancer

QPI Title:	30 and 90 day mortality following surgical resection for pancreatic, duodenal or distal biliary tract cancer.	
Description:	Proportion of patients with pancreatic, duodenal or distal biliary tract cancer who die within 30/90 days of surgical resection.	
Rationale and Evidence:	Mortality following resection for HPB cancer has fallen over the past 30 years and in specialist units should be less than 5%[13]. Disease specific interventions for pancreatic, duodenal or distal biliary tract cancer whether surgical resection or Systemic Anti-Cancer Therapy (SACT) should be performed safely with low rates of mortality. Similarly, treatment should only be undertaken in individuals that may benefit from treatment, that is, disease specific treatments should not be undertaken in futile situations. Treatment related mortality is a marker of the quality and safety of the whole service provided by the Multi Disciplinary Team (MDT)[10].	
Specifications:	**Numerator:**	Number of patients with pancreatic, duodenal or distal biliary tract cancer who undergo surgical resection that die within 30/90 days of treatment.
	Denominator:	All patients with pancreatic, duodenal or distal biliary tract cancer who undergo surgical resection.
	Exclusions:	• No exclusions.
Target:	30 days - <5% 90 days - <7.5%	

QPI 12 – Volume of Cases per Centre/Surgeon

QPI Title:	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 a specialist centre, and surgeon, over a 1 year period.
Rationale and Evidence:	Pancreatic resectional surgery should be performed by surgeons who work in a specialist Multi Disciplinary Team (MDT) in a specialist centre, with outcomes audited regularly and benchmarked nationally[13]. Surgical resection should be confined to specialist centres to increase resection rates and reduce hospital morbidity and mortality[11]. The literature demonstrates that there is a relationship between increasing surgical volumes for major hepatopancreatobiliary resections and improved patients outcomes (mortality)[14].
Specifications:	Number of surgical resections for pancreatic, duodenal or distal biliary tract cancer performed by each surgeon/centre in a given year. **Exclusions:** • No exclusions
Target:	Minimum 11 procedures per centre, with a minimum of 4 procedures per surgeon, in a 1 year period. This is a minimum target level and is designed to ensure that all surgeons performing HPB resections perform a minimum of 4 procedures per year. **Please Note:** Varying evidence exists regarding the most appropriate target level for surgical case volume. In order to ensure that the target level takes account of level 1 evidence and will drive continuous quality improvement as intended this performance indicator must be kept under regular review. It is recognised that multiple factors affect overall performance and that the end point focus must be clinical outcomes in what is a team delivered goal. It is recommended that where two consultants share an operation each should count the case in his/her numbers as this best reflects the partnership accountability of such shared procedures.

QPI 15 – Access to Oncology Services for Inoperable Pancreatic, Duodenal or Biliary Tract Cancer

QPI Title:	Patients with inoperable pancreatic, duodenal or biliary tract cancer should be seen by an oncologist to assess suitability for systemic treatment.	
Description:	Proportion of patients with pancreatic, duodenal or biliary tract cancer not undergoing surgery who are seen by an oncologist (or offered an oncology clinic appointment[†]) within 6 weeks of initial diagnostic CT scan.	
Rationale and Evidence:	Approximately 80% of patients with pancreatic, duodenal or biliary tract cancer will not be suitable for potentially curative surgical resection due to fitness or advanced disease at presentation[15]. Palliative treatment options have increased in recent years however rapid disease progression can result in potentially fit patients becoming unsuitable for treatment. Therefore timely assessment is important. Within this QPI, the reference point of being seen by an oncologist (or offered an appointment to be seen) has been chosen over actual treatment received to reflect that not all patients being considered for systemic therapy are suitable for treatment following assessment. The decision whether to proceed with treatment is complex therefore 6 weeks has been chosen as an appropriate timeframe for assessment in order to organise initiation of treatment.	
Specifications:	**Numerator:**	Number of patients with pancreatic, duodenal or biliary tract cancer not undergoing surgery who are seen by an oncologist (or offerred an oncology clinic appointment) within 6 weeks of initial diagnostic CTscan.
	Denominator:	All patients with pancreatic, duodenal or biliary tract cancer not undergoing surgery.
	Exclusions:	• No exclusions.
Target:	50% The tolerance within this target is designed to account for those patients with co-morbidities for whom systemic therapy would not be appropriate, and for factors of patient choice. **Please note:** In order to ensure that the chosen target level is the most appropriate and drives continuous quality improvement as intended it will be kept under review and revised as necessary, once baseline data or further evidence becomes available.	

[†] For the measurement of this QPI, the oncology clinic appointment date should be within 6 weeks of initial diagnostic CT scan.

QPI 16 – Key Worker

QPI Title:	Patients with hepatocellular cancer (HCC) should have an identified key worker to co-ordinate care across the patient pathway.
Description:	Proportion of patients with HCC who have an identified key worker at the time of referral to the MDT.
Rationale and Evidence:	Primary liver cancer (hepatocellular carcinoma, HCC) is a complex cancer to treat with various management options requiring input from multiple specialties, and as a result can require treatment across multiple health boards. Communication and continuity of care is vital for these patients to allow a co-ordinated, patient centred approach to their care. Mechanisms should be developed to promote continuity of care which may include the nomination of a person to take on the role of a key worker. This role will include communication with regards to care plans to all involved in a patient's care, ensuring patients know who to contact and managing transition of care[16].
Specifications:	**Numerator:** Number of patients with HCC who have an identified key worker at the time of referral to the MDT. **Denominator:** All patients with HCC. **Exclusions:** • No exclusions.
Target:	95% The tolerance within this target is to account for those patients who die before MDT discussion.

QPI 17 – 30 / 90 Day Mortality following Treatment for Colorectal Liver Metastases

QPI Title:	30 and 90 day mortality following treatment for Colorectal liver metastases (CRLM) with curative intent.	
Description:	Proportion of patients with CRLM undergoing curative treatment (resection / ablation) who die within 30 or 90 days of treatment.	
Rationale and Evidence:	Over 50% of patients with primary colorectal cancer will develop liver metastases[17,18]. Liver resection has now been widely accepted as the treatment of choice for primary colorectal liver metastases (CRLM), providing the only potential curative treatment with 5 year survival rates of 40 – 60% reported[19,20]. There should be standardised treatment and outcomes for these patients across HPB units in Scotland. Treatment should only be undertaken in individuals that may benefit from that treatment. This QPI is intended to ensure treatment is given appropriately, and the outcome reported on and reviewed.	
Specifications:	**Numerator:**	All patients with CRLM undergoing curative treatment (resection / ablation) who die within 30/90 days of treatment.
	Denominator:	All patients with CRLM undergoing curative treatment (resection / ablation).
	Exclusions:	• No exclusions.
	Please note:	This QPI will be reported by treatment modality as opposed to one single figure.
Target:	30 days <5% 90 days <7.5%	

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

7. Survival

Improving survival forms an integral part of the national cancer quality improvement programme. HPB cancer survival analysis will be reported and analysed on a 3 yearly basis by Public Health Scotland (PHS). The specific issues which will be addressed will be identified by an expert group ahead of any analysis being undertaken, as per the agreed national cancer quality governance and improvement framework.

The HPB Cancer QPI Group has identified, during the QPI development process, the following issues for survival analysis:

- 90 day survival following diagnosis
- Overall 1 and 2 year survival

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

8. Areas for Future Consideration

The HPB Cancer QPI Groups have not been able to identify sufficient evidence, or determine appropriate measurability specifications, to address all areas felt to be of key importance in the treatment of HPB cancer, and therefore in improving the quality of care for patients affected by HPB cancer.

The following areas for future consideration have been raised across the lifetime of the HPB Cancer QPIs.

- Surveillance and screening of patients with chronic liver disease for the development of hepatocellular carcinoma.
- Specialist pathology reporting for hepatocellular carcinoma.
- Palliative chemotherapy for pancreatic cancer.
- Surgical volumes for resection of primary liver cancer.
- Timing and outcomes of biliary intervention in patients with malignant biliary obstruction.
- Surgical margin rates.
- Specialist palliative care.

9. Governance and Scrutiny

A national and regional governance framework to assure the quality of cancer services in NHS Scotland has been developed; key roles and responsibilities within this are set out below. Appendices 3 and 4 provide an overview of these governance arrangements diagrammatically. The importance of ensuring robust local governance processes are in place is recognised and it is essential that NHS Boards ensure that cancer clinical audit is fully embedded within established processes.

9.1 National

- National Cancer Recovery Group
    - Accountable for overall National Cancer Quality Programme and overseeing the quality of cancer care across NHS Scotland.
    - Advise Scottish Government Health and Social Care Directorate (SGHSCD) if escalation required.

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

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

9.2 Regional – Regional Cancer Networks

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

9.3 Local – NHS Boards

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

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11. Appendices

Appendix 1: QPI Development Process

Preparatory Work and Scoping
The preparatory work involved the development of a structured briefing paper by Healthcare Improvement Scotland. This paper took account of existing, high quality, clinical guidance and provided a basis for the development of QPIs.

The scope for development of HPB Cancer QPIs and a search narrative were defined and agreed by the HPB Cancer QPI Development Group. The table below shows the final, inclusion and exclusion criteria used in the literature search.

Inclusion	Exclusion
Topics (population/patient): primary liver, biliary tract, pancreatic cancers, cholangiocarcinoma *Topics* (intervention): Diagnosis, staging, surgery, non-surgical management, treatment, palliative chemotherapy, radiotherapy and surgery. Adults only *Date:* 2005 to present day *Language:* all	*Topics:* Communication/information, end of life care, pain management, prevention, screening and secondary liver cancer.

Table 1: HPB Literature Search Criteria

A systematic search was carried out by Healthcare Improvement Scotland using selected websites and two primary medical databases to identify national and international guidelines.

Twenty seven guidelines were appraised for quality using the AGREE II[21] instrument. This instrument assesses the methodological rigour used when developing a guideline. Six of the guidelines were not recommended for use. Of the remaining 21 guidelines, 12 were unreservedly recommended for use and 9 were recommended for use with consideration of their applicability or currency.

Indicator Development

The HPB QPI Development group defined evidence based, measurable indicators with a clear focus on improving the quality and outcome of care provided.

The Group developed QPIs using the clinical recommendations set out in the briefing paper as a base, ensuring all indicators met the following criteria:

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

Engagement Process

A wide clinical and public engagement exercise was undertaken as part of development in April 2012 where the HPB Cancer QPIs, along with accompanying draft minimum core dataset and measurability specifications, were made available on the Scottish Government website. During the engagement period clinical and management colleagues from across NHSScotland, patients affected by HPB cancer and the wider public were given the opportunity to influence the development of HPB Cancer QPIs.

Draft documentation was circulated widely to professional groups, health service staff, voluntary organisations and individuals for comment and feedback.

Following the engagement period all comments and responses received were reviewed by the HPB Cancer QPI Development Group and used to produce and refine the final indicators.

HPB Cancer Development Group Membership (2012)

Name	Designation	Cancer Network/Base
Jennifer Armstrong	Senior Medical Officer (CHAIR)	Medical Director, NHS Greater Glasgow and Clyde
Dougal Adamson	Consultant Oncologist	NOSCAN (Ninewells Hospital)
Irfan Ahmed	Consultant Surgeon	NOSCAN (Aberdeen Royal Infirmary)
Rosanne Bate	Transplant Coordinator	SCAN (Edinburgh Royal Infirmary)
Andy Bathgate	Consultant Physician	SCAN (Edinburgh Royal Infirmary)
Chris Bellamy	Consultant Pathologist	SCAN (Edinburgh Royal Infirmary)
Andrew Fraser	Consultant Physician	NOSCAN (Aberdeen Royal Infirmary)
Alison Forrest	Clinical Services Manager	NOSCAN (Aberdeen Royal Infirmary)
Alan Foulis	Consultant Pathologist	WoSCAN (Glasgow Royal Infirmary)
Michele Hilton Boon	Programme Manager	Healthcare Improvement Scotland
Hedvig Karteszi	Consultant Radiologist	WoSCAN (Glasgow Royal Infirmary)
Jennifer Keatings	Information Officer	WoSCAN (Glasgow Royal Infirmary)
Derek Kerr	Patient Representative	
Lorraine Kirkpatrick	Cancer Nurse Specialist	SCAN (Edinburgh Royal Infirmary)
Maureen Lamb	Audit Facilitator	SCAN (Edinburgh Royal Infirmary)
Colin McKay	Consultant Surgeon; Lead Clinician National HPB Network	WoSCAN (Glasgow Royal Infirmary)
Brian Murray	Principal Information Development Manager	Information Services Division
James Powell	Consultant Surgeon	SCAN (Edinburgh Royal Infirmary)

Name	Designation	Cancer Network/Base
Iona Scott	Project Manager	WoSCAN
Adrian Stanley	Consultant Physician	WoSCAN (Glasgow Royal Infirmary)
Evelyn Thomson	Regional Manager (Cancer)	WoSCAN

NOSCAN – North of Scotland Cancer Network
SCAN – South East Scotland Cancer Network
WoSCAN – West of Scotland Cancer Network

Appendix 2: HPB Cancer QPI Formal Reviews

Formal review of the HPB Cancer QPIs was undertaken for the first time in September 2016. A Formal Review Group was convened, chaired by Dr Sophie Barrett, Consultant Medical Oncologist. Membership of this group included Clinical Leads from the three Regional Cancer Networks as well as the National Clinical Lead. Membership of this group is outlined below:

HPB Cancer QPI Formal Review Group Membership (2016)

Name	Designation	Cancer Network
Sophie Barrett (CHAIR)	Consultant Medical Oncologist	WoSCAN
Lorna Bruce	Cancer Audit Manager	SCAN
Anya Adair	HPB Lead Clinician	SCAN
Iain Tait	HPB Lead Clinician	NOSCAN
Euan Dickson	HPB Lead Clinician	WoSCAN
Evelyn Thomson	Regional Manager (Cancer)	WoSCAN
Steve Wigmore	National HPB Cancer Clinical Lead	SCAN
Jen Doherty	Project Co-ordinator	National Cancer Quality Programme
Lorraine Stirling	Project Officer	National Cancer Quality Programme

2nd Cycle Formal Review

The 2nd Cycle of Formal Review commenced in October 2019 following reporting of 6 years of QPI data. This cycle of review is more selective and focussed on ensuring the ongoing clinical relevance of the QPIs. A Formal Review Group was convened, with Mr Matthew Barber, Consultant Breast Surgeon and Breast Cancer MCN Lead, SCAN appointed as Clinical Advisor/Chair to the group. Membership of this group is outlined below:

HPB Cancer QPI Formal Review Group Membership – 2nd Cycle (2019)

Name	Designation	Cancer Network
Matthew Barber	Consultant Breast Surgeon and Breast Cancer MCN Lead (CHAIR)	SCAN
Anya Adair	National HPB Lead Clinician	SCAN
Irfan Ahmed	Consultant HPB Surgeon & Centre Lead	NCA
Lorna Bruce	Cancer Audit Manager	SCAN
Ross Carter	Consultant HPB Surgeon	WoSCAN
Euan Dickson	Consultant HPB Surgeon & Centre Lead	WoSCAN
Jen Doherty	Project Co-ordinator	National Cancer Quality Programme
Andrew Healey	Consultant HPB Surgeon & Centre Lead	SCAN

Neil Lachlan	Consultant Hepatologist	WoSCAN
Stephen McNally	Consultant HPB Surgeon & Centre Lead	NCA
Adrian Stanley	Professor / Consultant Gastroenterologist	WoSCAN
Lorraine Stirling	Project Officer	National Cancer Quality Programme
Iain Tait	Consultant HPB Surgeon & Centre Lead	NCA
Evelyn Thomson	Regional Manager (Cancer)	WoSCAN

3rd Cycle Formal Review

The 3rd cycle of formal review commenced in August 2022. Given the significant changes made at the previous review, the Scottish HepatoPancreatoBiliary Network (SHPBN) agreed that no changes were required at this time. Any comments/queries were addressed without the need for a formal meeting and minor updates made where required.

HPB Cancer QPI Formal Review Group Membership – 3rd Cycle (2022)

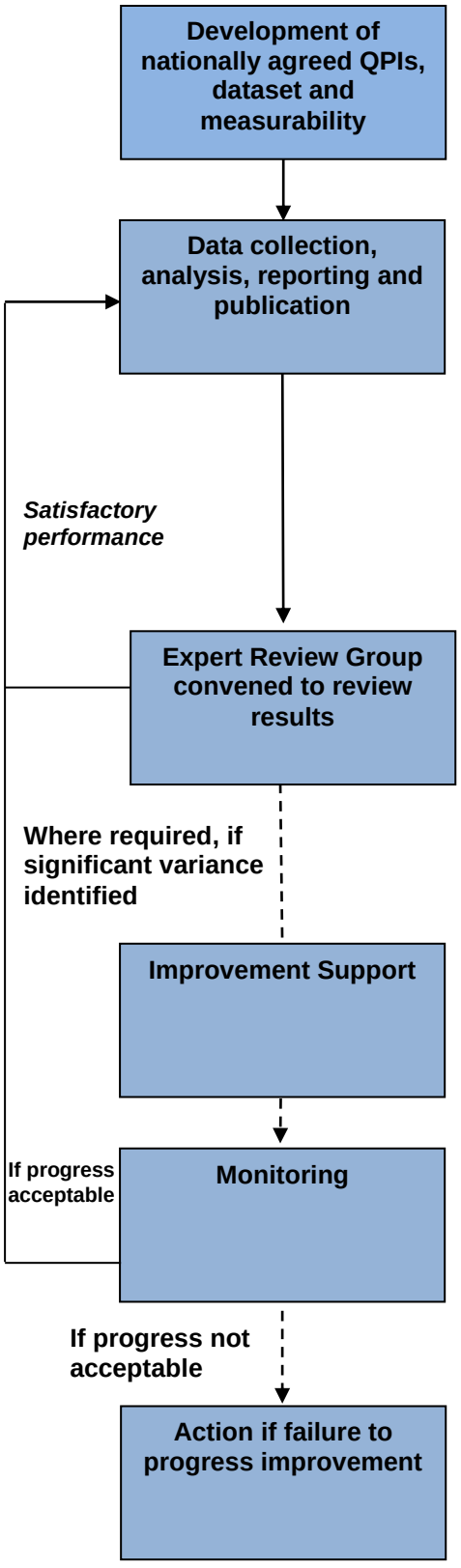
Name	Designation	Cancer Network
Anya Adair	National HPB Lead Clinician	SCAN
Bassam Alkari	Consultant HPB Surgeon & Centre Lead (Aberdeen)	NCA
Euan Dickson	Consultant HPB Surgeon & Centre Lead (Glasgow) (Pancreas)	WoSCAN
Jen Doherty	Project Co-ordinator	National Cancer Quality Programme
Andrew Healey	Consultant HPB Surgeon & Centre Lead (Edinburgh)	SCAN
James Milburn	Consultant HPB Surgeon & Centre Lead (Aberdeen)	NCA
Stephen McNally	Consultant HPB Surgeon & Centre Lead (Inverness)	NCA
Matthew Priest	Consultant Gastroenterologist & Centre Lead (Glasgow) (Liver)	WoSCAN
Lorraine Stirling	Project Officer	National Cancer Quality Programme
Iain Tait	Consultant HPB Surgeon & Centre Lead (Dundee)	NCA

Formal review of the HPB Cancer QPIs are undertaken in consultation with various other clinical specialties e.g. oncology and pathology.

NCA – North Cancer Alliance
SCAN – South East Scotland Cancer Network
WoSCAN – West of Scotland Cancer Network

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

This process is underpinned by the annual regional reporting and governance framework (see appendix 4).



1. National QPI Development Stage

- QPIs developed by QPI development groups, which include representation from Regional Cancer Networks, Healthcare Improvement Scotland, PHS, patient representatives and the Cancer Coalition.

2. Data Analysis Stage:

- NHS Boards and Regional Cancer Advisory Groups (RCAGs)* collect data and analyse on yearly basis using nationally agreed measurability criteria and produce action plans to address areas of variance, see appendix 4.
- Submit yearly reports to PHS for collation and publication every 3 years.
- National comparative report approved by NHS Boards and RCAGs.
- PHS produce comparative, publicly available, national report consisting of trend analysis of 3 years data and survival analysis.

3. Expert Review Group Stage (for 3 tumour types per year):

- Expert group, hosted by Healthcare Improvement Scotland, review comparative national results.
- Write to RCAGs highlighting areas of good practice and variances.
- Where required NHS Boards requested to submit improvement plans for any outstanding unresolved issues with timescales for improvement to expert group.
- Improvement plans ratified by expert group and National Cancer Recovery Group.

4. Improvement Support Stage:

- Where required Healthcare Improvement Scotland provide expertise on improvement methodologies and support.

5. Monitoring Stage:

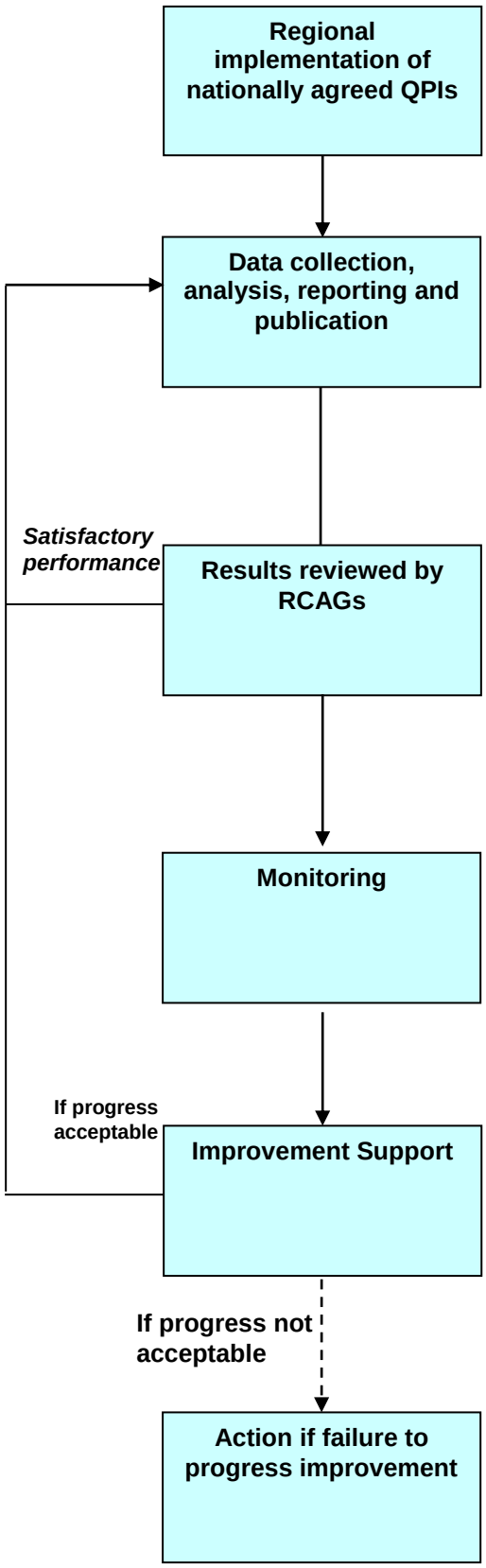
- RCAGs work with Boards to progress outstanding actions, monitor improvement plans and submit progress report to Healthcare Improvement Scotland.
- Healthcare Improvement Scotland report to National Cancer Recovery Group as to whether progress is acceptable**.**

6. Escalation Stage:

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

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

Appendix 4: Regional Annual Governance Process and Improvement Framework for Cancer Care



1. Regional QPI Implementation Stage:

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

2. Data Analysis Stage:

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

3. Regional Performance Review Stage:

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

4. Monitoring Stage:

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

5. Improvement Support Stage:

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

6. Escalation Stage:

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

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

Appendix 5: Glossary of Terms

Abdominal ultrasound	An imaging procedure used to examine the internal organs of the abdomen.
Ablative therapies	See *Cryotherapy* and *Radiofrequency Ablation*
Active treatment	Treatment which is intended to improve the cancer and/or alleviate symptoms, as opposed to supportive care.
Adenocarcinoma	Cancer that begins in cells that line certain internal organs and that have gland-like properties.
Adjuvant Chemotherapy	The use of chemotherapy, after initial treatment by surgery to reduce the risk of recurrence of the cancer.
AFP (Alpha-fetoprotein)	A protein normally produced by a foetus. AFP levels are usually undetectable in the blood of healthy adult men or women (who are not pregnant). An elevated level of AFP suggests the presence of either a primary liver cancer or germ cell tumour.
Biliary tract	The organs and ducts that make and store bile (a fluid made by the liver that helps digest fat), and release it into the small intestine. The biliary tract includes the gallbladder and bile ducts inside and outside the liver. Also called biliary system.
Biopsy	Removal of a sample of tissue from the body to assist in diagnosis of a disease.
Brush Cytology	Examination of cells obtained from a mucosal surface using a cytological brush
Chemotherapy	The use of drugs that kill cancer cells, or prevent or slow their growth.
Childs Pugh	Is used to assess the prognosis of chronic liver disease, mainly cirrhosis. Although it was originally used to predict mortality during surgery, it is now used to determine the prognosis, as well as the required strength of treatment and the necessity of liver transplantation.
Chronic liver disease	Chronic liver disease in the clinical context is a disease process of the liver that involves a process of progressive destruction and regeneration of the liver parenchyma leading to fibrosis and cirrhosis.
Co-morbidity	The condition of having two or more diseases at the same time.
Computerised Tomography (CT)	An x-ray imaging technique, which allows detailed investigation of the internal organ of the body.
Cryotherapy	A treatment which aims to eradicate cancer by freezing.
Curative treatment	Treatment which is given with the aim of curing the cancer.
Cytological	The study of the structure and function of cells under the microscope, and of their abnormalities.
Diagnosis	The process of identifying a disease, such as cancer, from its signs and symptoms.
Duodenal	Refers to the duodenum, or the first part of the small intestine.
Dysplastic nodules	Abnormal development or growth of tissues, organs, or cells.
Endoscopic Ultrasound (EUS)	A procedure in which an endoscope is inserted into the body. A probe at the end of the endoscope is used to bounce high-energy sound waves (ultrasound) off internal organs to make a picture.
Hepatocellular Carcinoma (HCC)	A type of adenocarcinoma and the most common type of liver tumour.
Hepatopancreatobiliary (HPB) Cancer	Cancer of the liver, pancreas, gallbladder and biliary tract.
Histological/ histopathological	The study of the structure, composition and function of tissues under the microscope, and their abnormalities.

Immunohistochemistry (IHC)	A technique used to identify specific molecules in different kinds of tissue. The tissue is treated with antibodies that bind the specific molecule. These are made visible under a microscope by using a colour reaction, a radioisotope, colloidal gold, or a fluorescent dye. Immunohistochemistry is used to help diagnose diseases, such as cancer, and to detect the presence of micro-organisms. It is also used in basic research to understand how cells grow and differentiate (become more specialised).
Inoperable	Describes a condition that cannot be treated by surgery.
Lesion	Tumour, mass, or other abnormality.
Liver	A large organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile.
Liver damage stages A and B	See *Childs Pugh*
Liver transplantation	Liver transplantation is a surgery that removes a diseased liver and replaces it with a healthy donor liver.
Lymph nodes	Small bean shaped organs located along the lymphatic system. Nodes filter bacteria or cancer cells that might travel through the lymphatic system.
Malignancy	Cancerous. Malignant cells can invade and destroy the tissue from which they originate and can spread to other sites in the body.
Metastatic	Spread of cancer away from the primary site to somewhere else via the bloodstream or the lymphatic system.
Milan Criteria	Criteria applied as a basis for selecting patients with cirrhosis and hepatocellular carcinoma for liver transplantation.
Mortality	Either (1) the condition of being subject to death; or (2) the death rate, which reflects the number of deaths per unit of population in any specific region, age group, disease or other classification, usually expressed as deaths per 1000, 10,000 or 100,000.
Multi-Disciplinary Team (MDT)	A meeting which is held on a regular basis, which is made up of participants from various disciplines appropriate to the disease area, where diagnosis, management, and appropriate treatment of patients is discussed and decided.
Orthotopic	Refers to something that occurs in the normal or usual place in the body. It is often used to describe tissue or an organ that is transplanted into its normal place in the body.
Palliative treatment	Anything which serves to alleviate symptoms due to the underlying cancer but is not expected to cure it.
Pancreas/Pancreatic	A glandular organ located in the abdomen. It makes pancreatic juices, which contain enzymes that aid in digestion, and it produces several hormones, including insulin. The pancreas is surrounded by the stomach, intestines, and other organs.
Pancreatitis	Inflammation of the pancreas.
Performance status	A measure of how well a patient is able to perform ordinary tasks and carry out daily activities. (PS WHO score of 0=asymptomatic, 4=bedridden).
Prognosis	An assessment of the expected future course and outcome of a person's disease.
R0 resection	A surgical procedure where the surgical margins are negative for cancer.
R1 resection	A surgical procedure where there are positive microscopic surgical margins.

Radio Frequency Ablation (RFA)	A procedure that uses radio waves to heat and destroy abnormal cells.
Resection	*See surgical resection*
Scottish Liver Transplant Unit (SLTU)	The Scottish Liver Transplantation Unit (SLTU) is funded to provide liver transplant services to the people of Scotland.
Staging	Process of describing to what degree cancer has spread from its original site to another part of the body. Staging involves clinical, surgical and pathology assessments.
Surgical resection	Surgical removal of the tumour/lesion.
Survival	The percentage of people in a study or treatment group who are alive for a certain period of time after they were diagnosed with or treated for a disease, such as cancer.
Systemic Anti-Cancer Therapy (SACT)	Treatment of cancer using drugs which prevent the replication or growth of cancer cells. This encompasses biological therapies and cytotoxic chemotherapy.
Trans-arterial Chemoembolisation (TACE)	Administration of chemotherapy directly to the liver tumour via a catheter. With this technique, the chemotherapy targets the tumour while sparing the patient many side effects of traditional chemotherapy that is given to the whole body
Tumour size	The size of a cancer measured by the amount of space taken up by the tumour.
Well-differentiated	Cancer in which the cells are mature and look like cells in the tissue from it arose. Differentiated cancers tend to be decidedly less aggressive than undifferentiated cancers composed of immature cells.
Whipple's resection	A type of surgery used to treat pancreatic cancer. The head of the pancreas, the duodenum, a portion of the stomach, and other nearby tissues are removed. Also called pancreatoduodenectomy.