TE AHO O TE KAHU CANCER CONTROL AGENCY

Te Kāwanatanga o Aotearoa New Zealand Government

PANCREATIC CANCER QUALITY PERFORMANCE INDICATOR DESCRIPTIONS

May 2023

Acknowledgements

This is a supporting document for the Pancreatic Cancer Quality Improvement Monitoring Report (the monitoring report), which published quality performance indicator (QPI) data from the Te Whatu Ora national data collections for people diagnosed with pancreatic cancer in Aotearoa New Zealand between 1 January 2015 and 31 December 2019.

This document is being released by Te Aho o Te Kahu, the Cancer Control Agency.

Te Aho o Te Kahu worked with the National Pancreatic Cancer Working Group to identify and report on the pancreatic cancer QPIs. We worked collaboratively to develop the indicators and indicator descriptions (contained within this report), to identify and access national data required to calculate the pancreatic cancer QPIs, and finally to analyse the data and report on findings (in the monitoring report).

We acknowledge that each data point contained within the monitoring report reflects a person or people with pancreatic cancer. Each person and their whānau will have been significantly impacted by pancreatic cancer and we want to acknowledge all those affected.

Authors

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INTRODUCTION

Across Aotearoa, cancer services deliver high quality care for most people, most of the time. However, this high-quality care is not consistently delivered to all parts of the country and to all people equally.

The quality performance indicator (QPI) programme aims to highlight variation in cancer treatment and outcomes and to identify where further investigation might be needed to support quality improvement. Addressing variation in the quality of cancer services is fundamental to improving patient outcomes and reducing inequities caused by geographical distribution, ethnicity and depriviation.

The programme reports on quality performance indicators at a regional or hospital level by cancer type using the Te Whatu Ora national data collections. Reporting on clinical processes and outcomes is an internationally accepted approach to driving quality improvement in cancer care.

This programme intends to provide information on the full cancer pathway from referral to palliation. However, due to current data limitations in national collections, most QPIs are focused on treatment. This will change when new data becomes available - the programme also aims to highlight where data collection or reporting improvements could be made.

The programme, in partnership with cancer-specific expert working groups, has developed, and reported on cancer-specific quality improvement indicators for bowel, lung, and prostate cancers, and is now reporting on pancreatic cancer QPIs. Breast cancer QPIs are currently in development along with a set of universal or common indicators across the programme. Every three years the QPI results will be updated with more recent data to show what changes have occurred.

This document sets out the descriptions, evidence and rationale for the full set of 19 pancreatic QPIs.

Quality performance indicators

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

We select QPIs based on 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 base** – is the indicator based on high-quality clinical evidence? Is there evidence of known equity gaps (eg, age or presence of co-morbidities) and opportunities for Māori health gain?
- **Measurability** – is the indicator measurable (ie, are there explicit requirements for data measurement, and are the required data items accessible and available for collection).

Each QPI in this document is set out in a specific format described below.

- **Title** – summary title to identify the QPI.
- **Description -** explains what the indicator is measuring.
- **Rationale and evidence -** brief overview which explains why we considered this indicator to be important.
- **Measurability specification** - describes how we will measure the indicator in practice, to allow for comparison across Aotearoa.

We have tried to minimise exclusions, to simplify measurement and reporting.

It is very difficult to accurately measure patient choice, co-morbidities and patient fitness; we note that this should be considered in interpreting variability between DHBs.[1] Where there are other factors that might influence variability between DHBs, we have noted this.

Pancreatic cancer quality performance indicators

Te Aho o Te Kahu and the National Pancreatic Cancer Working Group (the working group) (refer to appendix two) have collaborated to develop a set of 19 QPIs for pancreatic cancer (excluding pancreatic neuroendocrine tumours).

The process of development started with collating a 'long list' of pancreatic cancer QPIs was produced by the working group based on international and national literature. The working group then reviewed these indicators and considered which would be most valuable to drive quality improvements for pancreatic cancer care in Aotearoa. A 'short list' was carried forward for further discussion and initial assessment of measurability. A final list of potential pancreatic cancer QPIs were released for public consultation from August 2021 to September 2021.

An additional indicator (route to diagnosis) was added post consultation because other working groups that have developed cancer specific QPIs (such as bowel, lung and prostate) had included this measure and it has been determined to be a proxy *equity of access to diagnosis* measure for the QPI indicator programme as a whole.

Nine of the19 QPIs are able to be calculated using existing data from national collections. These are reported in the *Pancreatic cancer quality improvement monitoring report 2023*. The remaining 10 QPIs remain 'aspirational' and will be measured and reported on in the future when cancer data improvement projects make this is possible.

The QPIs are generally calculated and reported by DHB. The QPIs will present variation in diagnosis and treatment between hospitals with funnel plots to compare results.

[1] While DHBs have been disestablished as part of the 1 July 2022 health and disability sector reforms and DHBs are now being referred to as Te Whatu Ora districts, the term DHB is used in the pancreatic cancer QPI data tables, graphs, and some commentary. This is because the data used is from the time-period when DHBs existed.

For more information about the QPI programme please refer to our website (https://teaho.govt.nz/reports/qpi). This document should be read in conjunction with the monitoring report.

Pancreatic Cancer Quality Performance Indicators

The table below lists each indicator, with a hyperlink to the detailed descriptions for each indicator on the following pages.

Indicator title	Description	Calculated in monitoring report
PQI 01. Route to diagnosis	Proportion of people diagnosed with pancreatic cancer within 30 days of an emergency/acute admission to hospital.	Yes
PQI 02. Timeliness to treatment	Time from referral to first specialist appointment (FSA).	No
	Time from FSA to first definitive treatment.	
PQI 03. Radiological staging	Proportion of people with pancreatic cancer who have pancreatic protocol computerised tomography (CT) scan with synoptic reporting.	No
PQI 04. Resectability	Proportion of people with pancreatic cancer who have resectability ratified at the multidisciplinary meeting (MDM).	No
PQI 05. Multidisciplinary discussion	Proportion of people with a working diagnosis of pancreatic cancer discussed at an MDM.	No
PQI 06. Pancreatic resection	Proportion of people with pancreatic cancer who had a pancreatic resection.	Yes
PQI 07. Biliary drainage/stenting	Proportion of people with pancreatic cancer who had a biliary drainage procedure.	Yes
PQI 08. Tissue diagnosis	Proportion of people with pancreatic cancer who had a recorded tissue diagnosis.	Yes
PQI 09. Medical oncology review	Proportion of people with pancreatic cancer who were reviewed by a medical oncologist.	Yes
PQI 10. Systemic therapy	Proportion of people with pancreatic cancer who receive systemic anti-cancer therapy.	No
PQI 11. Radiation therapy	Proportion of people with pancreatic cancer who have received radiation therapy.	Yes
PQI 12. Structured pathology reporting	Proportion of resected people with pancreatic cancer with synoptic histopathology report.	No
PQI 13. Pancreatic fistula	Proportion of people with pancreatic cancer with post-operative pancreatic fistula.	No
PQI 14. Failure to rescue	In-hospital deaths from major complications after pancreatic resection for people with pancreatic cancer.	No

Indicator title	Description	Calculated in monitoring report
PQI 15. Days alive and out of hospital	The median number of days alive and out of hospital 30 days after pancreatic resection for pancreatic cancer.	Yes
PQI 16. Post-operative mortality	Proportion of people with pancreatic cancer who died within 30 and 90 days of pancreatic resection.	Yes
PQI 17. Overall survival	Proportion of people with pancreatic cancer who survived at 1, 2, and 5 years from diagnosis.	Yes
PQI 18. Palliative care	Proportion of people with pancreatic cancer referred to palliative care services.	No
PQI 19. Clinical trial participation	Proportion of people with pancreatic cancer participating in a clinical trial at any time after diagnosis.	No

PQI 01.
Route to diagnosis

Indicator description	Proportion of people diagnosed with pancreatic cancer within 30 days of an emergency/acute admission to hospital.
Rationale and evidence	The intention behind this indicator is that diagnosis following an emergency/acute admission to hospital should be rare and there should not be significant variation across geographic, socioeconomic and ethnic groupings within Aotearoa. The insidious onset of pancreatic cancer can contribute to a delay in diagnosis and people diagnosed with pancreatic cancer following emergency/acute admission to hospital are more likely to have advanced disease (McPhail et al., 2022). Where this occurs, it may indicate issues with access to primary care or other reasons for diagnostic delay in the community. Earlier detection of pancreatic cancer can lead to better outcomes, including better survival and lower risk of complications from treatment. Ideally the majority of people with pancreatic cancer should be diagnosed through an established elective referral pathway.
Equity/Māori health gain	Ethnic disparities in pancreatic cancer survival exist in Aotearoa. Māori have higher mortality rates than non-Māori. Several factors are potentially responsible for that, including presentation with more advanced disease (Gurney et al 2020a).
Specifications	
Numerator	Number of people with pancreatic cancer within 30 days of an emergency/acute admission to hospital.
Denominator	Number of people diagnosed with pancreatic cancer.
Notes	
Measurability	Measurable

PQI 02.
Timeliness to treatment

Indicator description	Time from referral to first specialist appointment (FSA). Time from FSA to first definitive treatment.
Rationale and evidence	Timely treatment following diagnosis of pancreatic cancer contributes to a better patient experience by reducing anxiety and uncertainty and minimising the risk of deterioration before treatment. It also leads to better outcomes.
Equity/Māori health gain	Systemic delays in healthcare for Māori and delays in presentation mean fewer resections for Māori and worse clinical outcomes. Māori have more metastatic disease on presentation than non-Māori (64% vs 52%) (Camburn and Hari Dass 2021). Māori with pancreatic cancer and no comorbidities were approximately 30% more likely to die than non-Māori with no comorbidity, despite having limited or no difference in stage in this group (Gurney et al 2020b). This suggests timely access to treatment is crucial for Māori.
Specifications	
Numerator	Median time for people with pancreatic cancer referral to FSA. Median time for people with pancreatic cancer from FSA to first definitive treatment.
Denominator	People with pancreatic cancer having treatment.
Notes	These indicate two different phases, time to specialist appointment and time to definitive treatment. The first mainly reflects events in the community while the second reflects events in the hospital. Both are valuable metrics. Definitive treatment includes chemotherapy (curative or palliative intent) or surgery. Data from Lakes District Health Board shows that average time to review a patient from time of referral is 17 days (range: 0–40 days).
Measurability	Aspirational

PQI 03.
Radiological staging

Indicator description	Proportion of people with pancreatic cancer who have a pancreatic protocol computerised tomography (CT) scan with synoptic reporting.
Rationale and evidence	Staging CT should be a pancreatic protocol and include chest, abdomen and pelvis. Staging in practice means identifying metastatic disease and determining resectability status. Synoptic reporting enables more complete capture of all important data and assists data analysis.
Equity/Māori health gain	Ethnicity-based reporting is required to ensure equity of radiological staging.
Specifications	
Numerator	Number of people with pancreatic cancer who had pancreatic protocol CT with synoptic reporting.
Denominator	Number of people with pancreatic cancer.
Notes	It is recommended that ethnicity and radiological staging is recorded in the synoptic report and presented at the multidisciplinary meeting. Radiological tumor, nodes, and metastases staging is difficult based on CT imaging, as it does not accurately identify involved nodes, which is the reason why there is increasing use of positron emission tomography – Computerised Tomorographic (PET-CT) in people with pancreatic cancer. PET-CT gives more accurate staging information than CT alone. For approximately 20% of people with pancreatic cancer their management changes after PET-CT, usually because of occult metastatic disease. PET-CT should be considered prior to pancreatic resection. Resectability is currently defined on anatomical criteria which do not necessarily reflect the biological behaviour of the pancreatic cancer. The international consensus criteria should be used (Isaji et al 2018) for reporting resectability status. Data from Lakes District Health Board shows that 84% of patients had a CT before or within seven days of first presentation.
Measurability	Aspirational

PQI 04. Resectability

Indicator description	Proportion of people with pancreatic cancer who have resectability ratified at the multidisciplinary meeting (MDM).
Rationale and evidence	While the tumor, nodes, metastasis (TNM) staging of pancreatic cancer correlates with survival, it is not accurate or useful in deciding whether a patient has resectable disease. That decision is based on the anatomical relationship of the tumour to the portal/superior mesenteric, coeliac and common hepatic arteries. Four categories of resectability are recognised (resectable, borderline resectable, locally advanced and unresectable) and each person with pancreatic cancer should be categorised for resectability. Multiple criteria have been published, but international consensus criteria is recommended (Isaji et al 2018). Differences in the proportions of patients between categories could reflect variation in criteria used, delays in presentations or different standards of reporting. Resectability has a significant bearing on the next step in treatment. Patients with resectable disease are currently referred for surgery, in contrast to those with borderline resectable disease who are referred for neoadjuvant chemotherapy. Patients with locally advanced and unresectable disease are referred for palliative chemotherapy. The resectability category should be ratified by consensus at the regional MDM.
Equity/Māori health gain	Delay in presentation, along with the current healthcare inequities for Māori result in lower chance of resection and worse outcomes (Camburn and Hari Dass 2021). Māori are more likely to have metastatic disease on presentation compared with non-Māori (64% vs 52%).
Specifications	
Numerator	Number of people with pancreatic cancer with their resectability category ratified at the MDM.
Denominator	Number of people with pancreatic cancer.
Notes	TNM staging is not accurate for pancreatic cancer. In contrast with other published definitions of resectability, the international consensus definition includes A (anatomy), B (biological markers) and C (patient condition), and all are important considerations in determining resectability (Isaji et al 2018). The proportion of patients within each category in each centre would be of interest. More important than determining resectability is whether patients receive the standard of care for their respective resectability category.
Measurability	Aspirational

PQI 05.
Multidisciplinary discussion

Indicator description	Proportion of people with a working diagnosis of pancreatic cancer discussed at an multidisciplinary meeting (MDM).
Rationale and evidence	International evidence shows that multidisciplinary care is a key aspect to providing best-practice treatment and care for people with cancer. Effective MDMs result in positive outcomes for people receiving the care. The benefits of MDMs include improvements in treatment planning, communication between care services, use of time and resources, equitable access to care, improved patient outcomes, satisfaction with care and participation in clinical trials. An experienced multidisciplinary team is important in reaching consensus with complex multimodality treatment decision-making, including the role of surgery.
Equity/Māori health gain	Māori have worse pancreatic cancer outcomes, but it is not known whether this is reflected in variations in the proportion of patients who are registered and discussed at an MDM. Māori who are discussed at an MDM should be proactively prioritised for discussion to acknowledge systemic delays and possible inequities to diagnosis. There should be appropriate cultural expertise at MDMs and a focus on achieving equity. Cultural safety should be prioritised at the MDM to achieve this. Where the outcome of an MDM discussion for a Māori patient is not in-line with an expected outcome, this should be documented and the reason stated for audit.
Specifications	
Numerator	Number of people with pancreatic cancer discussed at an MDM.
Denominator	Number of people with pancreatic cancer.
Notes	National data are not available to calculate this indicator because the numerator is not measured. Therefore, this quality performance indicator cannot be reported. The QPI will initially be the number of people who were discussed at an MDM (numerator alone). The MDM is an important opportunity for data capture, and a standardised national reporting format for MDM should be developed as an urgent priority. There is concern that there is insufficient time and resource to discuss all patients at an MDM. Not all patients require a detailed discussion, and the development of agreed treatment pathways would allow for efficient decision-making for most patients. An MDM requires participation by appropriate specialties including medical oncology, radiation oncology, radiology, pathology, gastro/endoscopy, palliative care and surgery. Data needs to be reported by district health board (DHB) even though hepatobiliary and pancreatic (HBP) MDMs do not exist in each DHB.
Measurability	Aspirational

PQI 06.
Pancreatic resection

Indicator description	Proportion of people with pancreatic cancer who had a pancreatic resection.
Rationale and evidence	It is important to know whether everyone with resectable disease is being resected. Pancreatic resection combined with adjuvant therapy is the historical standard of treatment for resectable pancreatic cancer (Takaori et al 2016). But this 'surgery-first' approach to treatment is being challenged. Neoadjuvant multimodal chemotherapy is now established for borderline resectable pancreatic cancer and is being offered more frequently for resectable pancreatic cancer and rarely for locally advanced pancreatic cancer (Versteijne et al 2018). Resectability can be difficult to predict by staging computerised tomography scanning after neoadjuvant chemotherapy (Barreto et al 2019). Thus a 'trial dissection' to determine resectability usually precedes resection. There is no role for pancreatic resection in the presence of distant metastatic disease.
Equity/Māori health gain	Māori have worse outcomes from pancreatic cancer (Gurney et al 2020b). Whether Māori are as likely to be offered potentially curative pancreatic resection needs to be determined. Māori who have resectable disease should be proactively prioritised for treatment, given Māori have worse outcomes and suffer from systemic inequities in the health care system.
Specifications	
Numerator	Number of people with pancreatic cancer who had pancreatic resection.
Denominator	Number of people with pancreatic cancer.
Notes	It would best to report resection rates in resectable, borderline resectable, and locally advanced categories. This would require recording at the MDM, based on an agreed method (Isaji et al 2018) and for national reporting of multidisciplinary meeting (MDM) (see quality performance indicator 3). Reporting Māori resection rates in resectable, borderline resectable, and locally advanced categories would provide further equity insights. This would also require mandatory ethnicity recording at all MDMs. It is not known how complete the Cancer Registry data are and therefore how accurate the number of people with pancreatic cancer is. The Cancer Registry includes data from death certificates, diagnostic coding from medical records, and minimum data set from discharge. No distinction is made between pancreatoduodenectomy or distal pancreatectomy, and both should be included. Given that there is a limited number of pancreatic cancer MDMs, the data should be reported for the service and domicile district health boards.
Measurability	Measurable

PQI 07.
Biliary drainage/stenting

Indicator description	Proportion of people with pancreatic cancer who had a biliary drainage procedure.
Rationale and evidence	Patients who present with biliary obstruction and jaundice (not from advanced tumour burden in the liver) benefit from a formal drainage procedure. Drainage procedures can be achieved by conventional endoscopic retrograde cholangiopancreatography (ERCP), percutaneous transhepatic cholangiography or endoscopic ultrasound (EUS) approaches. These all place biliary stents to relieve the obstruction. The purpose of drainage is to manage clinical symptoms (pruritis and impairment of liver synthetic function) and/or if there is a delay to surgery. Additionally, drainage in jaundiced patients is mandatory prior to commencement of chemotherapy, which may occur pre-operatively (neo-adjuvant) or form the mainstay of definitive treatment (non-resectable palliative intent). There is evidence that bile colonisation occurs with biliary stenting and that this is associated with an increased risk of infection after pancreatic resection.
Equity/Māori health gain	It is not known whether there is a difference in the stenting rates for Māori and non-Māori. Māori in more deprived and remote regions may be less likely to be offered a drainage procedure because of poorer access to endoscopic or interventional radiology expertise.
Specifications	
Numerator	Number of people with pancreatic cancer who had a biliary drainage procedure.
Denominator	Number of people with pancreatic cancer.
Notes	Ideally all hospitals should have equitable access to drainage procedures. Access to advanced endoscopic (ERCP and/or EUS) and interventional radiology skills varies. Most patients have ERCP for drainage but it is not mandatory for all patients. Complications of ERCP can delay definitive treatment and colonisation of the biliary tree with stenting can increase the risk of infection after pancreatic resection. Metal stents are preferred to plastic, as they allow prolonged drainage and reduce the need for repeat procedures (elective or urgent) and are associated with a lower risk of cholangitis. Comparison between providers should be made with caution where the denominator is the number of people with pancreatic cancer who received treatment. This is due to variations in case complexity. Centres that perform fewer pancreatic resections are likely to treat those with better prognoses, and higher-volume centres are likely to treat those with a range of prognoses (due to the availability of facilities and expertise). Therefore, higher-volume centres' outcome data may be skewed differently compared to lower-volume centres. The two should not necessarily be compared without taking case mix into consideration.
Measurability	Measurable

PQI 08.
Tissue diagnosis

Indicator description	Proportion of people with pancreatic cancer who had a recorded tissue diagnosis.
Rationale and evidence	Definitive tissue diagnosis is increasingly required prior to treatment. Tissue is acquired by various methods, but core biopsy tissue is recommended to provide a histological (rather than cytopathological) sample. This allows for formal histology and specialised immunohistochemical characterisation of tumour tissue.
Equity/Māori health gain	It is not known whether there is a difference in the tissue diagnosis rates for Māori and non-Māori. Māori should be prioritised and proactively referred for tissue diagnosis, particularly in areas which lack facilities that have higher Māori populations. This is important to overcome any delay to diagnosis and treatment decision-making.
Specifications	
Numerator	Number of people with pancreatic cancer who had a recorded tissue diagnosis.
Denominator	Total number of people with pancreatic cancer.
Notes	Core biopsy tissue for histopathology can be obtained by endoscopic ultrasound (EUS) and percutaneous radiological (US or CT image guided) methods. EUS is usually the preferred because it can provide additional information (eg, vascular staging, resectability, nodal status). Histopathology is preferred to cytology as it allows for tissue architecture, immunohistochemistry and genetic profiling. Cytology brushings can be obtained by endoscopic retrograde cholangiopancreatography (ERCP) or radiological access through the liver access and brushings will generally provide cyopathological samples (which lack structural integrity) although intra-ductal biopsies can be achieved occasionally. Combined EUS/ERCP is best practice and allows both tissue diagnosis and drainage procedure, if required. EUS is not available in every district health board that has endoscopy facilities. A tissue diagnosis is not always required. Sometimes the diagnosis can be sufficiently secure on the basis of radiological features and serum tumour markers. If resected a tissue diagnosis is obtained from the specimen. People receiving palliative care do not usually require additional procedures to gain a tissue diagnosis.
Measurability	Measurable

PQI 09.
Medical oncology review

Indicator description	Proportion of people with pancreatic cancer who were reviewed by a medical oncologist.
Rationale and evidence	Most people with pancreatic cancer present with locally advanced or metastatic disease, which means that medical management of pancreatic cancer and the complications of their malignancy will be the mainstay of treatment for the majority of people. Medical oncologists are experts in systemic therapy for malignancy. Improved survival has been demonstrated in those who meet a medical oncologist, and particularly those who receive systemic therapy in a timely fashion.
Equity/Māori health gain	Presentations, Investigations, Pathways, Evaluation and Rx study (PIPER) data indicates that Māori referrals, recommendations and receipt of systemic therapy are lower than for non-Māori. Ethnicity-specific reporting is required to ensure appropriate referral and access to a medical oncologist.
Specifications	
Numerator	Number of people with pancreatic cancer who were reviewed by medical oncologist.
Denominator	Number of people with pancreatic cancer.
Notes	That these data are not routinely and consistently collected across all district health boards (DHBs) is a concern in itself. Without it, existing inequities cannot be addressed. There is recognised inequity in access to medical oncologist review and subsequent therapies. From the limited data available and reported by Lakes District Health Board, 42% of people with pancreatic cancer (of the 55% referred) were reviewed by medical oncology.
Measurability	Measurable

PQI 10.
Systemic therapy

Indicator description	Proportion of people with pancreatic cancer who receive systemic anti-cancer therapy.
Rationale and evidence	All people with pancreatic cancer, regardless of stage, have proven survival benefit from receiving systemic therapy for their malignancy. Indications for chemotherapy include neoadjuvant and adjuvant (in the setting of potentially resectable and resectable disease, respectively) and palliative chemotherapy in those with advanced disease.
Equity/Māori health gain	Presentations, Investigations, Pathways, Evaluation and Rx (PIPER) data indicates that Māori referrals, recommendations, and receipt of systemic therapy are lower than for non-Māori. Ethnicity-specific reporting is required to ensure accessibility to treatment for Māori.
Specifications	
Numerator	Number of people with pancreatic cancer who receive systemic anti-cancer therapy.
Denominator	Number of people with pancreatic cancer.
Notes	This metric should be considered in the light of the stage of pancreatic cancer and the person's performance status since these have a bearing on whether it will be also useful to know the proportion of resected people with pancreatic cancer who get systemic anti-cancer therapy.
Measurability	Aspirational

PQI 11.
Radiation therapy

Indicator description	Proportion of people with pancreatic cancer who have received radiation therapy.
Rationale and evidence	It is important to know that people are being offered radiotherapy as an alternative means of local control (ie, unresectable disease or who are inoperable with no distant metastases) and palliation. Radiation therapy may be a reasonable alternative to chemotherapy for those wishing to have a shorter course of palliative therapy. In the neoadjuvant setting there is data showing that when combined with chemotherapy, radiaton therapy can improve disease-free survival, R0 (the margin negative resection rate) (Versteijne et al 2020) and local control (Hammel et al 2016). But this has not been found in all studies (Chauffert et al 2008).
Equity/Māori health gain	Although there is no significant difference in stage of presentation Māori with no comorbidity were approximately 30% more likely to die than non-Māori with no comorbidity. This points to possible unequal access to treatment rather than diagnosis (Gurney et al 2020b).
Specifications	
Numerator	Number of people with pancreatic cancer who received radiation therapy.
Denominator	Number of people with pancreatic cancer.
Notes	Volumetric modulated arc therapy or Intensity modulated radiation therapy may reduce toxicity of normal tissue irradiated. As evidence matures stereotactic body radiation therapy may become an option to include in the management of pancreatic cancer.
Measurability	Measurable

PQI 12.
Structured pathology reporting

Indicator description	Proportion of resected people with pancreatic cancer with synoptic histopathology report.
Rationale and evidence	Pathology reports of resection specimens provide important information which guides post-operative management and informs prognosis. Synoptic reporting improves the completeness of pathology reports.
Equity/Māori health gain	No data available.
Specifications	
Numerator	Number of resected people with pancreatic cancer with synoptic histopathology report.
Denominator	Number of resected people with pancreatic cancer.
Notes	The use of the Royal College of Pathologists of Australasia structured reporting protocol is strongly recommended and with a minimum of free text. This data would be best captured digitally. The current American Joint Committee on Cancer tumor nodes and metastasis staging criteria should be used in conjunction with the structured reporting protocol. The structured reporting of cytopathology using "The Papanicolaou Society of Cytopathology System for Reporting Pancreaticobiliary Cytology" is also recommended, if possible.
Measurability	Aspirational

PQI 13.
Pancreatic fistula

Indicator description	Proportion of people with pancreatic cancer with post-operative pancreatic fistula.
Rationale and evidence	A post-operative pancreatic fistula represents failure of healing/sealing of a pancreatic-enteric anastomosis, or it may represent a parenchymal leak not directly related to an anastomosis, such as one originating from the raw pancreatic surface (eg, left or central pancreatectomy, enucleation, and/or trauma). This involves a leak from pancreatic ductal system into and around the pancreas and not necessarily to another epithelialised surface (eg, via a surgical drain). The definition of pancreatic fistula should be based on the International Study Group for Pancreatic Surgery (ISGPS) with grade B and C being clinically significant.
Equity/Māori health gain	Case volumes and clinical outcomes, including pancreatic fistula, need to be reported by ethnicity.
Specifications	
Numerator	Number of people with pancreatic cancer with clinically significant post-operative pancreatic fistula (ISGPS B & C) after pancreatic resection.
Denominator	Number of people with pancreatic cancer resected.
Notes	This is key metric for the quality of pancreatic surgery and all units performing surgery will be collecting audit data on this complication. The small number of centres doing pancreatic surgery means that the data should be collected over more than an annual cycle: a 3-5 year rolling average should be considered. Ultimately this data would be best presented as a cumulative sum plot to demonstrate change over time. Centres performing surgery should also capture data for the Fistula Risk Score (Vollmer et al) so the data fistula rates can be risk-adjusted. A higher fistula risk score is associated with increased risk of clinically-relevant post-operative pancreatic fistula (FRS ≥4.9). Comparison between providers should be made with caution where the denominator is the number of people with pancreatic cancer who received treatment. This is due to variations in case complexity. Centres that perform fewer pancreatic resections are likely to treat those with better prognoses and higher-volume centres are likely to treat those with a range of prognoses (due to the availability of facilities and expertise). Therefore, higher-volume centres' outcome data may be skewed differently compared to lower-volume centres. The two should not necessarily be compared without taking case mix into consideration.
Measurability	Aspirational

PQI 14.
Failure to rescue

Indicator description	Proprotion of people with pancreatic cancer who died in-hospital from major complications after pancreatic resection.
Rationale and evidence	This reflects the ability to make an early diagnosis of major complications and deliver prompt and appropriate treatment. It involves the availability of equipment and services (eg, interventional radiology and interventional endoscopy) and is related to the quality of clinical decision-making.
Equity/Māori health gain	If there is inequity for Māori in post-operative outcomes, including outcomes after major complications, then they could be measured by this indicator.
Specifications	
Numerator	Number of people with pancreatic cancer who died due to major post-operative complications.
Denominator	Number of people with pancreactic cancer who had post-operative complications.
Notes	Major complications are defined as Clavien-Dindo category III, IV and V. These complications include deep vein thrombosis/pulmonary embolism, pneumonia, sepsis, shock/cardiac arrest, or gastrointestinal haemorrhage/acute ulcer. Ideally the incidence of each of these complications would be recorded and reported by ethnicity. Comparison between providers should be made with caution where the denominator is the number of people with pancreatic cancer who received treatment. This is due to variations in case complexity. Centres that perform fewer pancreatic resections are likely to treat those with better prognoses and higher-volume centres are likely to treat those with a range of prognoses (due to the availability of facilities and expertise). Therefore, higher-volume centres' outcome data may be skewed differently compared to lower-volume centres. The two should not necessarily be compared without taking case mix into consideration.
Measurability	Aspirational

PQI 15.
Days alive and out of hospital

Indicator description	Median number of days alive and out of hospital 30 days after pancreatic resection for pancreatic cancer.
Rationale and evidence	This patient-centred metric demonstrates greater sensitivity to patient- and surgery-level characteristics than differences in hospital characteristics. People with pancreatic cancer receiving optimal care will have a lower complication rate and a shorter hospital stay, which will be reflected in a more days alive and out of hospital. 'Out of hospital' means the patient has been discharged and not re-admitted to any hospital over the 30 days from the date of resection.
Equity/Māori health gain	If there are inequities for Māori in complication rates and outcomes then it could be measured through this indicator.
Specifications	This QPI will be reporting on median and range.
Descriptive measurement	This is a descriptive indicator that has no proportion measures (i.e. numerator and denominator). It aims to report on the median number of days alive and out of hospital 30 days after pancreatic resection for pancreatic cancer.
Notes	This has not been used previously. It would be helpful for this metric to be risk adjusted. Comparison between providers should be made with caution where the denominator is the number of people with pancreatic cancer who received treatment. This is due to variations in case complexity. Centres that perform fewer pancreatic resections are likely to treat those with better prognoses and higher-volume centres are likely to treat those with a range of prognoses (due to the availability of facilities and expertise). Therefore, higher-volume centres' outcome data may be skewed differently compared to lower-volume centres. The two should not necessarily be compared without taking case mix into consideration.
Measurability	Measurable

PQI 16.
Post-operative mortality

Indicator description	Proportion of people with pancreatic cancer who died within 30 and 90 days of pancreatic resection.
Rationale and evidence	Post-operative mortality is a marker of the quality and safety of cancer treatment provided by the multidisciplinary team. Death within 30 or 90 days of pancreatic resection may mean the treatment was inappropriate, the patient's fitness to receive surgery was not adequately assessed or the post-surgical monitoring was suboptimal. It may also be due to disease progression. Does not included those receiving palliative treatment.
Equity/Māori health gain	If later presentations mean fewer resections for Māori, then this is particularly important as Māori have a higher rate of mortality following resection.
Specifications	
Numerator	Number of people with pancreatic cancer who died within 30 and 90 days after a pancreatic resection.
Denominator	Number of people with pancreatic cancer who had a pancreatic resection.
Notes	Comparison between providers should be made with caution where the denominator is the number of people with pancreatic cancer who received treatment. This is due to variations in case complexity. Centres that perform fewer pancreatic resections are likely to treat those with better prognoses and higher-volume centres are likely to treat those with a range of prognoses (due to the availability of facilities and expertise). Therefore, higher-volume centres' outcome data may be skewed differently compared to lower-volume centres. The two should not necessarily be compared without taking case mix into consideration.
Measurability	Measurable

PQI 17.
Overall survival

Indicator description	Proportion of people with pancreatic cancer who survived at 1, 2, and 5 years from diagnosis.
Rationale and evidence	Overall survival rates are an indication of the quality of clinical management and outcome measures. These rates reflect many factors including early detection, general health and wellbeing of the population, access to healthcare and genetic and environmental variables. For the majority of cancers, the survival at 5 years after diagnosis is generally accepted as an indication of cure. As pancreatic cancer has a poor prognosis, 1 year survival time is also included as an indicator of effectiveness of care.
Equity/Māori health gain	Māori have similar rates of pancreatic cancer up until around 45 years of age, after which the groups diverge and Māori appear to have higher age-specific rates. Overall, incidence of pancreatic cancer is significantly higher for Māori (10.4/100,000) compared with non-Māori (6.7/100,000). Māori have disproportionately poor survival outcomes: median overall survival is 41 days for Māori and 90 days for New Zealand Europeans. The 1-year survival is 16% overall (Māori 14%, New Zealand Europeans 20%).
Specifications	
Numerator	Number of people with pancreatic cancer who survived at 1, 2, and 5 years from diagnosis.
Denominator	Number of people with pancreatic cancer.
Notes	This data should be adjusted for risk factors related to disease, ethnicity and co-morbidity. Pancreatic cancer is an increasing cause of cancer deaths and New Zealand's 1, 2 and 5 year survival rates are the lowest among comparable countries. Data from Lakes District Health Board shows that median overall survival is 71 days – 41 days for Māori compared to 90 days for New Zealand European. For people who received palliative chemotherapy, overall survival was 240 days compared to 34 days for people who only received palliative care. Data on overall survival for resectable pancreatic cancer was not obtained. People who had borderline resectable pancreatic cancer had a median overall survival of 167 days compared to 157 days in those who presented with locally advanced pancreatic cancer, and 43 days in those with metastatic pancreatic cancer. Numerator and denominator data are likely to be inaccurate as pancreatic cancer diagnosis is generally obtained from death certificates, and people with advanced pancreatic cancer don't always get a tissue diagnosis.
Measurability	Measurable

PQI 18.
Palliative care

Indicator description	Proportion of people with pancreatic cancer referred to palliative care services.
Rationale and evidence	Palliative care has a major role to play in the care of people with pancreatic cancer as more than 70% are not offered definitive 'curative' treatment at the time of presentation. Furthermore, more than 90% people with pancreatic cancer overall will ultimately die of it. All of these people have the potential to benefit from specialist palliative services. Palliative care referral is associated with significant reduction in use of chemotherapy near death, multiple emergency department visits and hospitalisations.
Equity/Māori health gain	Māori are at risk of underutilisation of palliative care services, as this is known to be associated with socioeconomic disparities and ethnicity. Accessibility is also an issue, due to a lack of palliative care services in remote regions.
Specifications	
Numerator	Number of people with pancreatic cancer referred to palliative careservices.
Denominator	Number of people with pancreatic cancer.
Notes	The vast majority of people with pancreatic cancer are managed in the community (at home and in hospice) and it is not clear whether data collection is possible (eg, number of people with pancreatic cancer referred to palliative care). This data will come from multiple sources (including the hospital record, advice from multidisciplinary meeting, discharge correspondence, GP record or referral letter to palliative care services or hospice). Data from Lakes District Health Board reporting an average of 14 days from oncology review to palliative treatment, emphasising the importance of including a timeframe. The need to make inferences about palliative care based on numerators and denominators listed, further highlights the need to capture this data and have this as a measurable quality performance indicator.
Measurability	Aspirational

PQI 19.
Clinical trial participation

Indicator description	Proportion of people with pancreatic cancer participating in a clinical trial at any time after diagnosis.
Rationale and evidence	Progress in preventing, diagnosing and treating cancer predominantly comes from scientific research. This includes the testing of new, potentially more effective, medications and procedures through clinical trials. People who participate in these trials gain access to the very latest advances in cancer care developed by cancer specialists.
Equity/Māori health gain	No New Zealand data available. However, Māori and other minority ethnicities are under-represented in clinical trial participation, in general.
Specifications	
Numerator	Number of people with pancreatic cancer treated on a clinical trial at anytime after diagnosis.
Denominator	Number of people with pancreatic cancer.
Notes	Pancreatic cancer trials are rare and difficult to recruit to. Keeping a national database and a national trials centre would increase awareness of what is available and increase patient participation and biobanking.
Measurability	Aspirational

APPENDIX 1: GLOSSARY

Term	Description
Adenocarcinoma	Cancer that begins in cells that line certain internal organs and that have gland-like (secretory) properties.
Advanced disease	Advanced pancreatic cancer means the cancer has spread from where it started or has come back some time after treatment (recurrence). Pancreatic cancer can be quite advanced when it is first diagnosed.
Biopsy	Removal of tissue to be looked at under a microscope to help in the diagnosis of a disease.
Carcinoma	The medical term for cancer.
Chemotherapy	Treatment aimed at destroying cancer cells using anti-cancer drugs, which are also called cytotoxic drugs.
Clavien-Dindo classification	Used to grade the severity of surgical complications.
Clinical trials	A type of research study that tests how well new medical approaches or medicines work. These studies test new methods of screening, prevention, diagnosis or treatment of a disease.
Computerised tomography (CT)	An X-ray imaging technique, which allows detailed investigation of the internal organ of the body.
Curative intent	Treatment which is given with the aim of curing the cancer.
Definitive treatment	This covers surgery, chemotherapy and radiotherapy.
Diagnosis	The process of identifying a disease, such as cancer, from its signs and symptoms.
District health board (DHB)	An organisation responsible for ensuring publicly funded health and disability service[2]s are provided to people living in a geographical area.
Endoscopic retrograde cholangiopancreatography (ERCP)	A procedure combining upper gastrointestinal endoscopy and X-rays to diagnose and treat certain problems of the liver, gallbladder, bile ducts and pancreas.
Fistula	An abnormal or surgically-made passage between a hollow or tubular organ and the body surface, or between two hollow or tubular organs.
Histology	The study of tissues and cells under a microscope.
Histological/histopathological	The study of the structure, composition, function and abnormalities of tissues under the microscope.
Inoperable	Describes a condition too extensive to be treated by surgery.

[2] While DHBs have been disestablished as part of the 1 July 2022 health and disability sector reforms and DHBs are now being referred to as Te Whata Ora districts, the term DHB is used in data tables, graphs, and some commentary. This is because the data used is from the time-period when DHBs existed.

Term	Description
Interventional radiology	Involves delivery of precise, targeted treatment for complex diseases and conditions using minimally-invasive, image-guided techniques.
Jaundice	A condition in which the skin, whites of the eyes and mucous membranes turn yellow because of a high level of bilirubin, a yellow-orange bile pigment.
Lymph nodes	Small oval-shaped structures found in clusters throughout the lymphatic system. They form part of the immune system and are also known as lymph glands.
Malignancy	Cancerous. Malignant cells can invade and destroy nearby tissue and spread to other parts of the body.
Metastasis	The spread of cancer from the primary site (place where it started) to other places in the body via the bloodstream or the lymphatic system.
Morbidity	How much ill health a particular condition causes.
Mortality	Either (1) the condition of being subject to death; or (2) the death rate, which reflects the number of deaths per unit of population in any specific region, age group, disease or other classification, usually expressed as deaths per 1000, 10,000 or 100,000.
Multidisciplinary	A treatment-planning approach or team that includes several doctors and other health care professionals who are experts in different specialties (disciplines).
Palliative care	Care given to improve the quality of life of people who have a serious or life-threatening disease.
Palliative treatment	Anything which serves to alleviate symptoms due to the underlying cancer but is not expected to cure it.
Pancreatectomy	Partial or total surgical removal of the pancreas.
Pancreatoduodenectomy (Whipple procedure)	A complex surgical procedure that involves removal of the head of the pancreas, the first part of the small intestine (duodenum), the gallbladder and the bile duct.
Pathological stage	The stage of cancer (amount or spread of cancer in the body) based on how different from normal the cells (in samples of tissue) look under a microscope.
Performance status	A measure of how well a patient is able to perform ordinary tasks and carry out daily activities. For example, a WHO score of 0 = asymptomatic, 4 = bedridden; an Eastern Cooperative Oncology Group (ECOG) score of 0 = fully active, 5 = dead.
Prognosis	An assessment of the expected future course and outcome of treatment.
Radiotherapy	Treatment using high energy X-rays to destroy cancer cells.
Stage	A way of describing the size of a cancer and how far it has grown. Staging is important because it helps decide which treatments are required.
Stenting	Insertion of a plastic or wire mesh tube into a blocked duct or hollow organ to keep it open and restore the flow of bile, blood or other fluids.

Term	Description
Stratification	The separation of data into smaller, more defined groups based on a predetermined set of criteria.
Surgical resection	Surgery to remove tissue or part or all an organ.
Synoptic reporting	A process for reporting specific data elements in a standardised and structured format in surgical pathology reports.
Tissue	A group or layer of cells that work together to perform a specific function.
TNM group stage	T stands for the original (primary) tumour. N stands for nodes (indicates whether the cancer has spread to the nearby lymph nodes). M stands for metastasis. It is often useful to combine TNM system categories into groups. Tumours localised to the organ of origin are generally staged as I or II depending on their extent; locally extensive spread to regional nodes is staged as III; and those with distant metastasis are classified as stage IV. While most Stage I tumours are curable, most Stage IV tumours are inoperable.
TNM system	T stands for the original (primary) tumour. N stands for nodes (indicates whether the cancer has spread to the nearby lymph nodes). M stands for metastasis. The TNM system is a global standard used to record the anatomical extent of disease. In the TNM system, each cancer is assigned a letter or number to describe the tumour, node and metastases.
Toxicity	The extent to which something is poisonous or harmful.

APPENDIX 2: WORKING GROUP MEMBERS

Note: When the QPI descriptions were developed it was prior to the health and disability reforms on 1 July 2022. For consistency across the pancreatic QPI reports we have used the new Te Whatu Ora organisation names in place of the district health board names.

The National Pancreatic Cancer Working Group members in 2020 - 2022 when this work was carried out were:

Chair

Professor John Windsor, Surgeon, Te Whatu Ora Te Toka Tumai Auckland and University of Auckland

Members

Associate Professor Adam Bartlett, Surgeon, Te Whatu Ora Te Toka Tumai Auckland

Associate Professor Andrew MacCormick, Surgeon, Te Whatu Ora, Counties Manukau

Dr Andrew Miller, Pathologist, Canterbury Health Laboratories

Dr Andrew Wilson, Anaesthetist, Te Whatu Ora Te Toka Tumai Auckland

Dr Anna Wojtacha, Medical Oncologist, Te Whatu Ora, Nelson Marlborough

Dr Chris McKee, Radiologist, Te Whatu Ora Waitematā

Dr Colleen Van Der Vyver, Palliative Medicine Specialist, Te Whatu Ora Te Pae Hauora o Ruahine o Tararua MidCentral

Dr Daniel Cookson, Interventional Radiologist, Te Whatu Ora Counties Manukau

Dr David Orr, Hepato/gastroenterologist, Te Whatu Ora Te Toka Tumai Auckland

Dr Dean Harris, Medical Oncologist, Te Whatu Ora Waitaha Canterbury

Dr Dorothy Lombe, Radiation Oncologist, Te Whatu Ora Te Pae Hauora o Ruahine o Tararua MidCentral

Dr Emma McMenamin, Palliative Medicine SMO, Te Whatu Ora Capital and Coast and Hutt Valley

Dr Frank Weilert, Gastroenterologist, Te Whatu Ora Waitaha Canterbury

Dr Gabriel Lau, Radiologist, Pacific Radiology

Grant Middleton, Consumer

Helen Brown, Dietitian, Nurse Maude Canterbury

Dr Janet Hayward, General Practitioner, Nelson-Marlborough

Dr Jeremy Rossaak, Surgeon, Te Whatu Ora, Hauora a Toi Bay of Plenty

Professor Jonathan Koea, Surgeon, Te Whatu Ora Waitematā

Dr Kate Clarke, Medical Oncologist, Te Whatu Ora, Capital and Coast and Hutt Valley

Dr Matthew Drake, Anatomical Pathologist, Te Whatu Ora Waitaha Canterbury

Dr Michael Rodgers, Surgeon, Te Whatu Ora Waitematā

Nadine Peake, Cancer Nurse Coordinator, Te Whatu Ora Waitaha Canterbury

Dr Paul Restall, Histopathologist, Te Whatu Ora Te Toka Tumai Auckland
Petro Nel, Clinical Nurse Specialist
Dr Saxon Connor, Surgeon, Te Whatu Ora Waitaha Canterbury
Dr Sayali Pendharkar-Orpe, Lead Science Advisor, Ministry of Health
Dr Simon Bann, Surgeon, Te Whatu Ora Capital and Coast and Hutt Valley
Dr Sam Wall, Anaesthetist, Te Whatu Ora Te Toka Tumai Auckland

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