

6

Chapter

Pancreaticoduodenectomy for pancreatic, biliary tract & small intestinal cancers

Infocus – access and flows for
public & private patients
2002-2011

Queensland Health

Queensland Cancer Control
Safety and Quality Partnership



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Cancer Surgery in Queensland: Infocus - access and flows for public & private patients 2002-2011 Chapter 6 Pancreaticoduodenectomy

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Introduction

Pancreaticoduodenectomy is one chapter in the *Cancer Surgery in Queensland: Infocus - access and flows* series and should be read in conjunction with the Cancer Surgery in Queensland - Background document, available at <https://qccat.health.qld.gov.au/>.

Surgery is a critical component of the curative treatment of cancer. This chapter is focused on two dimensions of access to cancer care services – surgery rates and patient flows. It provides population wide information on rates of surgery provision and flows based on patient Hospital and Health Service (HHS) of residence. The chapter contains information on pancreaticoduodenectomy in Queensland from 2002 – 2011.

For the first time, a population profile for cancer patients undergoing pancreaticoduodenectomy in Queensland and in each HHS is described including the characteristics of these patients.

The baseline information provided in this chapter will inform the planning and funding of cancer services, provide HHSs with locally meaningful information and contribute to our understanding of variation in pancreaticoduodenectomy rates across Queensland. This information enables Queensland to compare themselves with other Australian states and territories, internationally and published literature.

This chapter is framed around four important questions relevant to cancer surgery in Queensland.

1. How many Queenslanders who are newly diagnosed with pancreatic, biliary tract or small intestine cancer have pancreaticoduodenectomy as a result of their diagnosis?
2. What are the characteristics of Queenslanders who have a pancreaticoduodenectomy as a result of their pancreatic, biliary tract or small intestine cancer diagnosis?
3. How many pancreaticoduodenectomies are performed by HHSs for Queenslanders newly diagnosed with pancreatic, biliary tract or small intestine cancer?
4. Where do patients receive their pancreaticoduodenectomies?

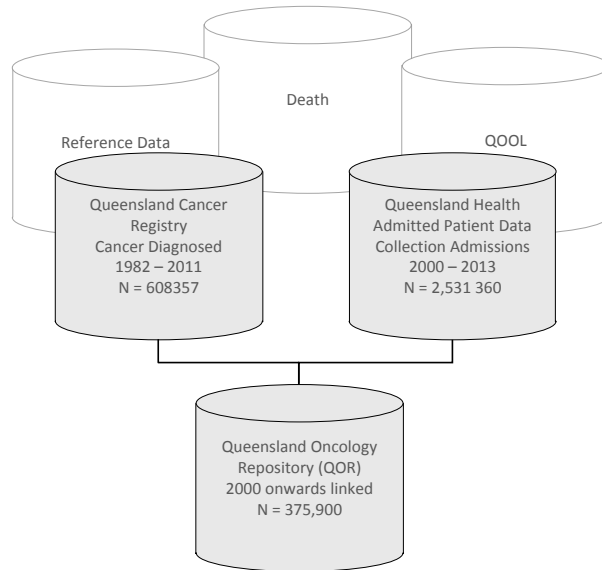
Data sources and methods

Key to QCCAT's program of work is our ability to link population based cancer information on an individual patient basis, using a master linkage key specifically developed by our team. This matched and linked data is housed in the Queensland Oncology Repository (QOR), a resource managed by QCCAT. This centralised repository, QOR, compiles and collates data from a range of source systems including Queensland Cancer Registry, hospital admissions data, death data, treatment systems, public and private pathology, hospital clinical data systems and QOOL. QOR contains approximately 32 million records between 1982 – 2013. Our matching and linking processes provide the 375 900 matched and linked records of cancer patients between 2000 – 2011, which are the starting point for this analysis. This chapter is structured around two cohorts of patients: **Queensland Cancer Cohort** and the **Pancreaticoduodenectomy Cohort**.

¹ Queensland Health. *Oncology Analysis System (OASys)*. Queensland Cancer Control Analysis Team: Brisbane; 2014. <https://qool.health.qld.gov.au/OASys>. Accessed 01/08/2014

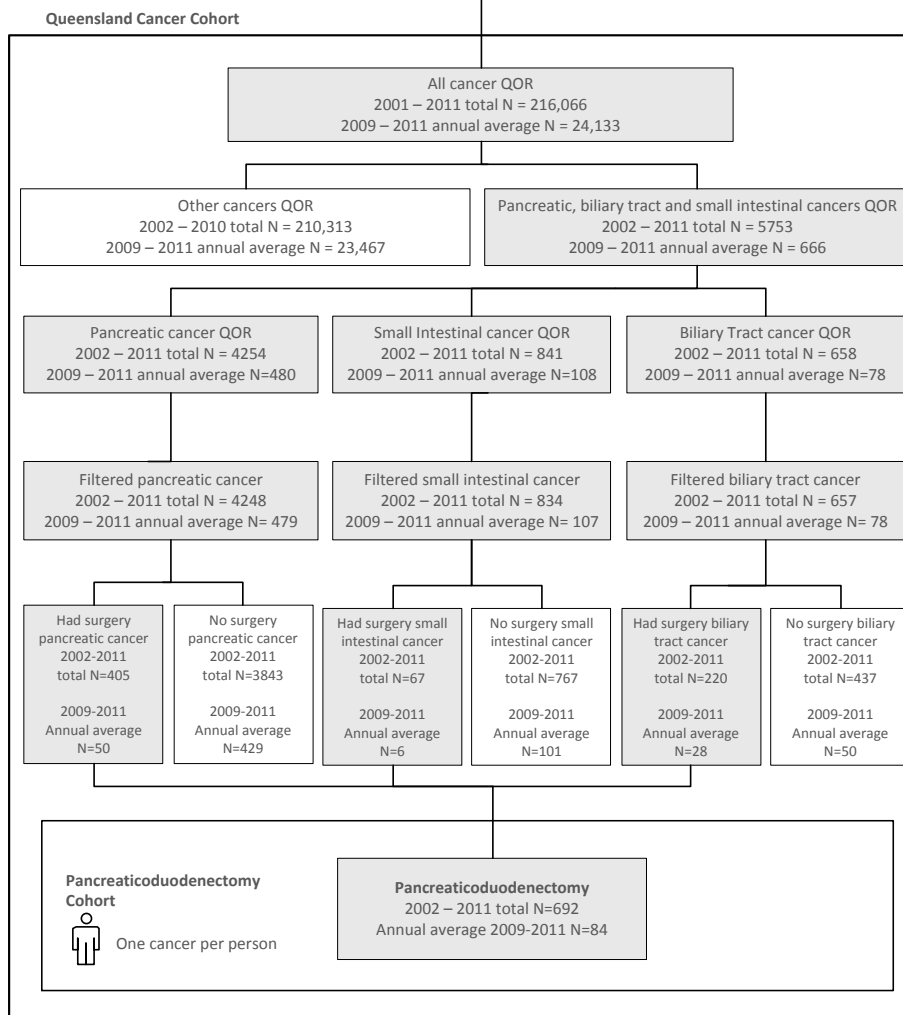
How the cohorts were identified

2002 – 2011 AND 2009 – 2011 ANNUAL AVERAGE
PUBLIC & PRIVATE HOSPITAL PATIENTS



Queensland Oncology Repository
QOR consolidates patient information for Queensland and contains data on invasive, benign and uncertain cancers, patient demographics, surgery, chemotherapy, radiotherapy and death. QOR also contains data collected by clinicians at MDT meetings

Sophisticated matching and linking is performed to identify all persons with cancer who had surgery



Queensland Cancer Cohort
Includes: Queensland Invasive Cancer incidence
Discharged patients from public or private hospitals
Queensland residents
All ages

Pancreaticoduodenectomy Cohort
Filtered cases
Potential duplicate records

Rules
If the surgery happened > 1 month before the date of diagnosis then the surgery is excluded

No Surgery Cohort
Includes Qld residents of all ages diagnosed with pancreatic, biliary tract and small intestinal cancer who did not undergo a pancreaticoduodenectomy in the surgical cohort time period

Time periods

Time period – 01 December 2001 to 31 December 2013

Diagnosis year - 01 January 2002 to 31 December 2011

Cancer definitions - the site and morphology of the cancers have been coded according to the International Classification of Diseases for Oncology, 3rd edition (ICD-O-3).

Site	ICD-0-3	Morphology
Malignant neoplasm of pancreas	C25	All
Head of pancreas	C25.0	
Body of pancreas	C25.1	
Tail of pancreas	C25.2	
Pancreatic duct	C25.3	
Endocrine pancreas	C25.4	
Other parts of pancreas	C25.7	
Overlapping lesion of pancreas	C25.8	
Pancreas, unspecified	C25.9	
Malignant neoplasm of other unspecified parts of biliary tract	C24	All
Extrahepatic bile duct	C24.0	
Ampulla of Vater	C24.1	
Overlapping lesion of biliary tract	C24.8	
Biliary tract, unspecified	C24.9	
Malignant neoplasm of small intestine	C17	All
Duodenum	C17.0	
Jejunum	C17.1	
Ileum	C17.2	
Meckel's diverticulum	C17.3	
Overlapping lesion of small intestine	C17.8	
Small intestine, unspecified	C17.9	

Exclusions

The following exclusions apply:

- Non Queensland residents
- People diagnosed with conditions other than cancers such as: chronic pancreatitis
- Other surgeries, such as distal pancreatectomy, performed to treat pancreatic, small intestinal and biliary tract cancer

Identification and categorisation of cancer related procedures

A pancreaticoduodenectomy surgery performed one month prior to or anytime following a cancer diagnosis was included. The following process was used to assign a Pancreaticoduodenectomy surgery to patients with cancer

- The pancreaticoduodenectomy surgery code was identified from the Australian Classification of Health Interventions (ACHI) International Classification of Diseases (ICD-10-AM) 7th Edition, 2010
- The identification of the pancreaticoduodenectomy surgery code was reviewed by an expert clinician

Number of ICD-10-AM 7th edition coded procedures

The following tables outlines the relevant pancreaticoduodenectomy procedures included in this report for Queensland residents (both public & private) diagnosed with pancreatic, biliary tract and small intestinal cancer:

Indication	ICD-10-AM	PROCEDURE/GROUPING	NUMBER OF PROCEDURES		
			2002-2011	Annual average 2009 -2011	2011
Pancreatic, biliary tract or small intestinal cancers	30584-00	Pancreaticoduodenectomy surgery (pancreaticoduodenectomy with formation of stoma)	694	84	88
Non cancer diagnosis (most commonly pancreatitis)	30584-00	Pancreaticoduodenectomy surgery (pancreaticoduodenectomy with formation of stoma)	149		

Surgery rate

ANNUAL AVERAGE YEAR OF DIAGNOSIS 2009 – 2011
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

Characteristic	Annual Average		Had Surgery		No Surgery	
	Pancreas, small intestinal & biliary tract	(Qld %)	n	(row %)	n	(row %)
Queensland	664	(100%)	84	(13%)	580	(87%)
Gender						
Male	365	(55%)	55	(15%)	310	(85%)
Female	300	(45%)	30	(10%)	270	(90%)
Age Group						
< 65	216	(33%)	44	(21%)	173	(80%)
65-74	187	(28%)	32	(17%)	156	(83%)
75-84	182	(27%)	9	(5%)	173	(95%)
85+	80	(12%)	1	(1%)	79	(100%)
Indigenous Status						
Indigenous	6	(1%)	1	(18%)	5	(82%)
Non-Indigenous	629	(95%)	79	(13%)	550	(87%)
Not Stated/Unknown	30		4	(15%)	25	(85%)
Socioeconomic Status						
Affluent	93	(14%)	14	(15%)	78	(85%)
Middle	457	(69%)	57	(12%)	400	(88%)
Disadvantaged	109	(16%)	13	(12%)	96	(88%)
Unknown	6	(1%)			6	(100%)
Remoteness						
Major City	434	(65%)	57	(13%)	376	(87%)
Inner Regional	136	(21%)	16	(11%)	121	(89%)
Outer Regional	80	(12%)	10	(13%)	69	(87%)
Remote & Very Remote	9	(1%)	1	(11%)	8	(89%)
Qld Unknown	6	(1%)			6	(100%)
Diagnosis Basis						
Histology	355	(53%)	81	(23%)	274	(77%)
Cytology	105	(16%)	2	(2%)	102	(98%)
Clinical	186	(28%)	1	(1%)	185	(100%)
Other	19	(3%)			19	(100%)
Comorbidity						
0	424	(64%)	54	(13%)	370	(87%)
1	152	(23%)	21	(14%)	131	(86%)
2+	88	(13%)	9	(10%)	79	(90%)

In the interest of completeness, annual average numbers have been included with fewer than 16 cases. Numbers < 16 should be interpreted with caution due to poor reliability of calculations based on small numbers. Annual average numbers have been rounded up to the nearest whole number for those with less than one, therefore the totals may not add up.

Surgery rate

ANNUAL AVERAGE YEAR OF DIAGNOSIS 2009 – 2011
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

	Annual Average		Had Surgery		No Surgery	
	Pancreas, small intestinal & biliary tract	(Qld %)	n	(row %)	n	(row %)
Queensland	664	(100%)	84	(13%)	580	(87%)
HHS (patient residence)						
Metro South	141	(21%)	17	(12%)	124	(88%)
Metro North	122	(18%)	15	(12%)	107	(88%)
Gold Coast	92	(14%)	14	(16%)	78	(84%)
Sunshine Coast	69	(10%)	9	(13%)	60	(87%)
Darling Downs	48	(7%)	6	(13%)	42	(88%)
Wide Bay	38	(6%)	5	(13%)	33	(87%)
Cairns and Hinterland	31	(5%)	4	(12%)	27	(88%)
West Moreton	33	(5%)	4	(12%)	29	(88%)
Townsville	29	(4%)	4	(14%)	25	(86%)
Central Queensland	25	(4%)	3	(11%)	23	(89%)
Mackay	19	(3%)	2	(12%)	17	(88%)
South West	5	(1%)	1	(21%)	4	(93%)
North West	3	(0%)	1	(33%)	3	(89%)
Central West	2	(0%)	1	(60%)	1	(60%)
Torres Strait and Cape York	2	(0%)			2	(100%)
Qld Unknown	6	(1%)			6	(100%)

In the interest of completeness, annual average numbers have been included with fewer than 16 cases. Numbers < 16 should be interpreted with caution due to the poor reliability of calculations based on small numbers. Annual average numbers have been rounded up to the nearest whole number for those with less than one. For example if a HHS performed one surgery from 2009 - 2011 the annual average will be rounded up to one to reflect that this HHS is performing surgery. Therefore the totals may not add up.

Pancreaticoduodenectomy

ANNUAL AVERAGE YEAR OF DIAGNOSIS 2009 – 2011

PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

Characteristic	Annual Average		Had Surgery		Pancreas		Biliary Tract		Small Intestine	
	Pancreas, small intestinal & biliary tract	(Qld %)	n	(col %)	n	(row %)	n	(row %)	n	(row %)
Queensland	664	(100%)	84	(13%)	50	(59%)	28	(33%)	6	(8%)
Gender										
Male	365	(55%)	55	(65%)	32	(58%)	20	(36%)	3	(6%)
Female	300	(45%)	30	(35%)	18	(62%)	8	(28%)	3	(10%)
Age Group										
< 65	216	(33%)	44	(53%)	26	(59%)	15	(33%)	3	(8%)
65-74	187	(28%)	32	(38%)	20	(62%)	10	(33%)	2	(5%)
75-84	182	(27%)	9	(11%)	5	(56%)	3	(30%)	1	(15%)
85+	80	(12%)	1	(1%)			1	(100%)		
Indigenous Status										
Indigenous	6	(1%)	1	(1%)	1	(100%)	1	(100%)		
Non-Indigenous	629	(95%)	79	(94%)	47	(59%)	26	(33%)	6	(8%)
Not Stated/Unknown	30	(4%)	4	(5%)	3	(69%)	1	(23%)	1	(23%)
Socioeconomic Status										
Affluent	93	(14%)	14	(17%)	7	(51%)	6	(40%)	1	(9%)
Middle	457	(69%)	57	(68%)	34	(60%)	19	(33%)	4	(8%)
Disadvantaged	109	(16%)	13	(15%)	9	(67%)	4	(28%)	1	(8%)
Unknown	6	(1%)								
Remoteness										
Major City	434	(65%)	57	(68%)	34	(59%)	19	(33%)	5	(8%)
Inner Regional	136	(21%)	16	(19%)	10	(64%)	6	(36%)		
Outer Regional	80	(12%)	10	(12%)	6	(55%)	3	(29%)	2	(16%)
Remote & Very Remote	9	(1%)	1	(1%)	1	(100%)	1	(100%)		
Qld Unknown	6	(1%)								
Comorbidity										
0	424	(64%)	54	(64%)	29	(53%)	20	(36%)		
1	152	(23%)	21	(25%)	14	(68%)	6	(30%)	6	(29%)
2+	88	(13%)	9	(11%)	7	(78%)	2	(22%)	1	(11%)

In the interest of completeness, annual average numbers have been included with fewer than 16 cases. Numbers < 16 should be interpreted with caution due to poor reliability of calculations based on small numbers. Annual average numbers have been rounded up to the nearest whole number for those with less than one, therefore the totals may not add up.

Pancreaticoduodenectomy by patient residence

ANNUAL AVERAGE YEAR OF DIAGNOSIS 2009 – 2011
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

	Pancreas, small intestine & biliary tract	(Qld %)	Had Surgery n (col %)	Pancreas n (row %)	Biliary Tract n (row %)	Small Intestine n (row %)
Queensland	664	(100%)	84 (13%)	50 (59%)	28 (33%)	6 (8%)
HHS (patient residence)						
Metro South	141	(21%)	17 (20%)	11 (63%)	5 (29%)	1 (8%)
Metro North	122	(18%)	15 (18%)	10 (67%)	5 (31%)	1 (7%)
Gold Coast	92	(14%)	14 (17%)	8 (58%)	4 (26%)	2 (16%)
Sunshine Coast	69	(10%)	9 (11%)	5 (52%)	4 (48%)	
Darling Downs	48	(7%)	6 (7%)	4 (61%)	2 (33%)	1 (17%)
Wide Bay	38	(6%)	5 (6%)	3 (53%)	2 (47%)	
Cairns and Hinterland	31	(5%)	4 (4%)	2 (55%)	1 (27%)	1 (27%)
West Moreton	33	(5%)	4 (5%)	2 (50%)	1 (33%)	1 (25%)
Townsville	29	(4%)	4 (5%)	2 (50%)	2 (42%)	1 (25%)
Central Queensland	25	(4%)	3 (3%)	2 (88%)	1 (38%)	
Mackay	19	(3%)	2 (3%)	1 (57%)	1 (43%)	
South West	5	(1%)	1 (1%)			1 (100%)
North West	3	(0%)	1 (1%)	1 (100%)		
Central West	2	(0%)	1 (1%)		1 (100%)	
Torres Strait and Cape York	2	(0%)				
Qld Unknown	6	(1%)				

In the interest of completeness, annual average numbers have been included with fewer than 16 cases. Numbers < 16 should be interpreted with caution due to poor reliability of calculations based on small numbers. Annual average numbers have been rounded up to the nearest whole number for those with less than one, therefore the totals may not add up.

Pancreaticoduodenectomy by HHS performing surgery

ANNUAL AVERAGE YEAR OF DIAGNOSIS 2009 – 2011

PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

	Annual Average		Pancreas		Biliary Tract		Small Intestine	
	Had Surgery	(col %)	n	(row %)	n	(row %)	n	(row %)
Queensland	84	(100%)	50	(59%)	28	(33%)	6	(8%)
HHS (performing surgery)								
Metro South	35	(42%)	20	(41%)	12	(42%)	3	(53%)
Metro North	28	(34%)	17	(34%)	10	(37%)	1	(16%)
Gold Coast	11	(13%)	7	(15%)	2	(8%)	2	(26%)
Townsville	6	(8%)	3	(7%)	3	(10%)	1	(16%)
Sunshine Coast	3	(3%)	2	(3%)	1	(4%)		
Darling Downs	1	(1%)	1	(2%)				

*The Cairns and Hinterland, Central Queensland, West Moreton, Mackay, North West, South West, Central West, Wide Bay, Torres Strait & Cape York and Qld Unknown HHSs did not perform pancreaticoduodenectomy surgery.

In the interest of completeness, annual average numbers have been included with fewer than 16 cases. Numbers < 16 should be interpreted with caution due to poor reliability of calculations based on small numbers. Annual average numbers have been rounded up to the nearest whole number for those with less than one, therefore the totals may not add up.

Characteristics of cancer patients receiving pancreaticoduodenectomy by patient residence

ANNUAL AVERAGE YEAR OF DIAGNOSIS 2009 – 2011
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

	Had Surgery		Male		Median Age at Diagnosis yrs	Disadvantaged		Indigenous		One or more comorbidities		Private		Emergency	
	n	(Qld %)	n	(row %)		n	(row %)	n	(row %)	n	(row %)	n	(row %)	n	(row %)
Queensland	84	(13%)	55	(65%)	71 yrs	13	(15%)	1	(1%)	30	(36%)	48	(57%)	7	(8%)
HHS (patient residence)															
Metro South	17	(20%)	9	(53%)	70 yrs	2	(10%)			4	(25%)	10	(59%)	2	(10%)
Metro North	15	(18%)	11	(76%)	72 yrs	1	(7%)			7	(47%)	9	(58%)	2	(11%)
Gold Coast	14	(17%)	9	(65%)	71 yrs					5	(37%)	8	(56%)	2	(14%)
Sunshine Coast	9	(11%)	6	(67%)	73 yrs	1	(11%)			3	(37%)	5	(59%)	1	(11%)
Darling Downs	6	(7%)	4	(72%)	73 yrs	1	(22%)			2	(33%)	4	(72%)	1	(17%)
Wide Bay	5	(6%)	3	(60%)	72 yrs	5	(93%)			2	(40%)	3	(60%)		
Cairns and Hinterland	4	(4%)	2	(45%)	69 yrs	1	(36%)			2	(45%)	2	(45%)		
West Moreton	4	(5%)	2	(58%)	70 yrs	1	(25%)	1	(25%)	1	(33%)	2	(58%)		
Townsville	4	(5%)	3	(75%)	67 yrs	1	(25%)	1	(25%)	1	(33%)	3	(67%)	1	(25%)
Central Queensland	3	(3%)	1	(50%)	69 yrs					1	(38%)	2	(63%)	1	(38%)
Mackay	2	(3%)	2	(86%)	67 yrs	1	(43%)			1	(43%)	1	(43%)		
South West	1	(1%)	1	(100%)	66 yrs										
North West	1	(1%)	1	(100%)	71 yrs					1	(100%)			1	(100%)
Central West	1	(1%)	1	(100%)	62 yrs	1	(100%)								

*No patients from Torres Strait and Cape York and Qld Unknown were reported as undergoing pancreaticoduodenectomy surgery

In the interest of completeness, annual average numbers have been included with fewer than 16 cases. Numbers < 16 should be interpreted with caution due to the poor reliability of calculations based on small numbers. Annual average numbers have been rounded up to the nearest whole number for those with less than one. For example if a HHS performed one surgery from 2009 - 2011 the annual average will be rounded up to one to reflect that this HHS is performing surgery. Therefore the totals may not add up.

Patient flows



10 year patient flows for Pancreaticoduodenectomy

YEAR OF DIAGNOSIS 2002 – 2011 (COL% ROW %)

PUBLIC & PRIVATE HOSPITAL PATIENTS

Hospitals performing surgery* HHS (patient residence)	HHS of surgery				
	Metro South 3	Metro North 6	Gold Coast 4	Sunshine Coast 2	Darling Downs 1
Metro South	115 (42% 84%)	22 (9% 16%)			
Metro North	17 (6% 13%)	112 (46% 87%)			
Gold Coast	13 (5% 12%)	3 (1% 3%)	89 (100% 85%)		
Sunshine Coast	34 (13% 48%)	11 (5% 15%)		26 (81% 37%)	
Darling Downs	23 (8% 47%)	22 (9% 45%)		1 (3% 2%)	3 (100% 6%)
Wide Bay	13 (5% 24%)	32 (13% 58%)		5 (16% 9%)	
Cairns and Hinterland	15 (6% 65%)	3 (1% 13%)			
West Moreton	26 (10% 74%)	7 (3% 20%)			
Townsville	1 (0% 4%)	4 (2% 14%)			
Central Queensland	5 (2% 19%)	21 (9% 78%)			
Mackay	5 (2% 26%)	1 (0% 5%)			
South West	3 (1% 50%)	3 (1% 50%)			
North West	1 (0% 25%)				
Central West		2 (1% 67%)			
Torres Strait and Cape York					
Qld Unknown					
Queensland	271	243	89	32	3
Qld (%)	(39%)	(35%)	(13%)	(5%)	(0%)
Annual Average	27	24	9	3	0

*The number of hospitals within a HHS performing pancreaticoduodenectomy surgery

col% is used to show the distribution of residence for the total group of patients who were operated on by a single HHS. For example: of the 271 surgeries that Metro South performed, 115 (42%) of patients were also residents of Metro South. The other 156 patients (58%) who received surgery in Metro South reside in twelve other HHSs.

10 year patient flows for Pancreaticoduodenectomy

YEAR OF DIAGNOSIS 2002 – 2011 (COL% ROW %)
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

HHS of surgery					Qld	
Wide Bay 2	Cairns and Hinterland 1	West Moreton 1	Townsville 2	Central Queensland 1	n	%
					137	(20%)
					129	(19%)
					105	(15%)
					71	(10%)
					49	(7%)
5 (100% 9%)					55	(8%)
	3 (75% 13%)		2 (5% 9%)		23	(3%)
		2 (100% 6%)			35	(5%)
			23 (55% 82%)		28	(4%)
				1 (100% 4%)	27	(4%)
			13 (31% 68%)		19	(3%)
					6	(1%)
			3 (7% 75%)		4	(1%)
			1 (2% 33%)		3	(0%)
	1 (25% 100%)				1	(0%)
5 (1%)	4 (1%)	2 (0%)	42 (6%)	1 (0%)	692	(100%)
1	0	0	4	0		

*The number of hospitals within a HHS performing pancreaticoduodenectomy surgery

row% is used to show the proportion of patients residing in a given HHS who also receive their surgery in the same HHS, and what proportion had their surgery in another HHS. For example: of the 137 residents of Metro South, 115 (84%) also had their surgery in Metro South. The other 22 (16%) patients had surgery in the Metro North.

2011 patient flows for Pancreaticoduodenectomy

YEAR OF DIAGNOSIS 2002 – 2011 (COL% ROW %)
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

Hospitals performing surgery*	HHS of surgery					Qld	
	Metro South 3	Metro North 4	Gold Coast 3	Sunshine Coast 1	Townsville 2	n	%
HHS (patient residence)							
Metro South	15 (41% 94%)	1 (3% 6%)				16	(18%)
Metro North	2 (5% 13%)	14 (48% 88%)				16	(18%)
Gold Coast	5 (14% 31%)		11 (100% 69%)			16	(18%)
Sunshine Coast	6 (16% 55%)	1 (3% 9%)		4 (100% 36%)		11	(13%)
Darling Downs	3 (8% 50%)	3 (10% 50%)				6	(7%)
Wide Bay		6 (21% 100%)				6	(7%)
Cairns and Hinterland	2 (5% 50%)	1 (3% 25%)			1 (14% 25%)	4	(5%)
West Moreton	3 (8% 75%)	1 (3% 25%)				4	(5%)
Townsville	1 (3% 33%)				2 (29% 67%)	3	(3%)
Central Queensland		2 (7% 100%)				2	(2%)
Mackay					2 (29% 100%)	2	(2%)
South West							
North West					1 (14% 100%)	1	(1%)
Central West					1 (14% 100%)	1	(1%)
Torres Strait and Cape York							
Qld Unknown							
Queensland	37	29	11	4	7	88	
Qld (%)	(42%)	(33%)	(13%)	(5%)	(8%)	(100%)	

*The number of hospitals within a HHS performing pancreaticoduodenectomy surgery

col% is used to show the distribution of residence for the total group of patients who were operated on by a single HHS. For example: of the 37 surgeries that Metro South performed, 15 (41%) of patients were also residents of Metro South. The other 22 (49%) patients who received surgery in Metro South reside in seven other HHSs.

row% is used to show the proportion of patients residing in a given HHS who also receive their surgery in the same HHS, and what proportion had their surgery in another HHS. For example: of the 16 patients who reside in Metro South 15 (94%) also had their surgery in Metro South. The other patient (6%) had surgery in the Metro North HHS.

Surgery rates



10 year surgery trend for pancreaticoduodenectomy by patient residence

YEAR OF DIAGNOSIS 2002 – 2011
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

	Pancreas, small intestinal & biliary tract		Had Surgery		Year of Diagnosis																			
					2002		2003		2004		2005		2006		2007		2008		2009		2010		2011	
					N	(col %)	n	(row %)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Queensland	5739	(100%)	692	(12%)	55	(12%)	69	(14%)	55	(11%)	65	(12%)	77	(13%)	51	(8%)	67	(11%)	80	(13%)	85	(13%)	88	(13%)
HHS (patient residence)																								
Metro South	1233	(21%)	137	(11%)	12	(13%)	14	(14%)	8	(7%)	14	(13%)	15	(13%)	13	(9%)	10	(7%)	24	(18%)	11	(8%)	16	(11%)
Metro North	1085	(19%)	129	(12%)	12	(15%)	13	(15%)	5	(5%)	13	(12%)	11	(11%)	12	(9%)	18	(17%)	14	(13%)	15	(11%)	16	(13%)
Gold Coast	700	(12%)	105	(15%)	9	(16%)	8	(13%)	10	(19%)	8	(14%)	10	(17%)	5	(8%)	12	(16%)	12	(13%)	15	(18%)	16	(16%)
Sunshine Coast	577	(10%)	71	(12%)	6	(15%)	4	(8%)	9	(17%)	5	(11%)	8	(14%)	4	(7%)	8	(12%)	7	(11%)	9	(13%)	11	(15%)
Darling Downs	424	(7%)	49	(12%)	5	(12%)	3	(7%)	9	(23%)	5	(13%)	7	(16%)	2	(6%)			6	(11%)	6	(14%)	6	(13%)
Wide Bay	330	(6%)	55	(17%)	2	(7%)	9	(26%)	4	(20%)	6	(18%)	9	(26%)	2	(7%)	8	(22%)	2	(5%)	7	(20%)	6	(14%)
Cairns and Hinterland	294	(5%)	23	(8%)			5	(19%)	1	(4%)	3	(12%)	1	(3%)			2	(8%)	2	(7%)	5	(12%)	4	(16%)
West Moreton	279	(5%)	35	(13%)	4	(27%)	4	(17%)	2	(7%)	3	(10%)	2	(8%)	5	(17%)	3	(9%)	5	(15%)	3	(9%)	4	(12%)
Townsville	258	(4%)	28	(11%)	3	(18%)	3	(15%)	1	(3%)	1	(5%)	3	(11%)	3	(11%)	2	(9%)	4	(15%)	5	(19%)	3	(9%)
Central Queensland	238	(4%)	27	(11%)	2	(11%)	2	(10%)	3	(12%)	3	(17%)	7	(20%)	1	(5%)	1	(4%)			6	(20%)	2	(7%)
Mackay	169	(3%)	19	(11%)			2	(18%)	1	(10%)	2	(10%)	1	(7%)	3	(17%)	3	(13%)	3	(14%)	2	(8%)	2	(15%)
South West	38	(1%)	6	(16%)			1	(33%)	1	(100%)	2	(22%)			1	(33%)					1	(20%)		
North West	26	(0%)	4	(15%)					1	(50%)			2	(25%)									1	(33%)
Torres Strait & Cape York	16	(0%)	1	(6%)			1	(50%)															1	(50%)
Central West	15	(0%)	3	(20%)									1	(33%)					1	(50%)			1	(50%)
Qld Unknown	57	(1%)																						

Note: %'s for each year are used to show the percentage of patients who had surgery out of the total number of incidences for that year of pancreatic, biliary tract & intestinal cancer. For example in Queensland in 2002 there were 55 patients who had pancreaticoduodenectomy surgery which is 12% of the total incidences of pancreatic, biliary tract & intestinal cancer in 2002.

10 year surgery trend for pancreaticoduodenectomy by HHS performing surgery

YEAR OF DIAGNOSIS 2002 – 2011
PUBLIC & PRIVATE HOSPITAL PATIENTS

DEFINITIVE
SURGERY
MUTUALLY
EXCLUSIVE

	Had Surgery		Year of Diagnosis																			
			2002		2003		2004		2005		2006		2007		2008		2009		2010		2011	
	n	(row %)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Queensland	692	(100%)	55	(100%)	69	(100%)	55	(100%)	65	(100%)	77	(100%)	51	(100%)	67	(100%)	80	(100%)	85	(100%)	88	(100%)
HHS (performing surgery)																						
Metro South	271	(39%)	24	(44%)	29	(42%)	20	(36%)	25	(38%)	23	(30%)	22	(43%)	22	(33%)	39	(49%)	30	(35%)	37	(42%)
Metro North	243	(35%)	16	(29%)	21	(30%)	16	(29%)	21	(32%)	32	(42%)	21	(41%)	31	(46%)	25	(31%)	31	(36%)	29	(33%)
Gold Coast	89	(13%)	9	(16%)	7	(10%)	8	(15%)	7	(11%)	10	(13%)	5	(10%)	9	(13%)	9	(11%)	14	(16%)	11	(13%)
Townsville	42	(6%)	3	(5%)	5	(7%)	3	(5%)	1	(2%)	5	(6%)	3	(6%)	3	(4%)	6	(8%)	6	(7%)	7	(8%)
Sunshine Coast	32	(5%)	2	(4%)	2	(3%)	5	(9%)	6	(9%)	7	(9%)			2	(3%)	1	(1%)	3	(4%)	4	(5%)
Wide Bay	5	(1%)			1	(1%)	2	(4%)	2	(3%)												
Cairns and Hinterland	4	(1%)			2	(3%)			2	(3%)												
Darling Downs	3	(0%)					1	(2%)	1	(2%)									1	(1%)		
West Moreton	2	(0%)			2	(3%)																
Central Queensland	1	(0%)	1	(2%)																		

*The Mackay South West, Central West, North West, Torres Strait & Cape York and Qld Unknown HHSs did not perform pancreaticoduodenectomy surgery.

Note: %'s for each year are used to show the percentage of patients who had pancreaticoduodenectomy surgery out of the total number of pancreaticoduodenectomy surgeries for that year for intestinal, biliary tract & pancreatic cancer. For example in Queensland in 2002 Metro South performed 44% of the total pancreaticoduodenectomy cancer surgeries for intestinal, biliary tract & pancreatic cancer.

Technical appendix



Definitions

Annual average

Annual average refers to the sum of numbers divided by the number of years being reported. In this report annual average numbers have been rounded up to the nearest whole number for those with less than 1.

Chargeable status - public and private

On admission to hospital, an eligible patient must elect to be either a public or private patient.

A public patient is a patient who:

- Elects to be treated as a public patient, and so cannot choose the doctor who treats them, or
- Is receiving treatment in a private hospital under a contract arrangement with a public hospital or health authority.

A private patient is a patient who, by choosing the doctor who will treat them (provided the doctor has 'right of private practice' or is a general practitioner/specialist with admitting rights) has elected to be treated as a private patient.

Cohort

Queensland cancer cohort

Queenslanders who were identified in Queensland Oncology Repository as being diagnosed with cancer between 1 January 2002 and 31 December 2011.

Pancreaticoduodenectomy cohort

Queenslanders who were diagnosed with invasive pancreatic, biliary tract and small intestinal cancer between 1 January 2002 and 31 December 2011.

Col %

Percentage of the column total

Comorbidity

A clinical condition that has the potential to significantly affect a cancer patient's prognosis after diagnosis with cancer.

Comorbidity is derived from hospital admissions data following the Quan algorithm¹ for classifying ICD-10 coded conditions, modified to exclude metastasis, which is represented by a separate and distinct Metastasis dimension.

Comorbidity is limited to conditions coded in any admission episode between 12 months before and 12 months after the date of cancer diagnosis.

For any given cancer diagnosis, comorbidity is restricted to conditions other than the primary cancer. For example: a breast cancer can be a comorbidity to a lung cancer diagnosis and vice versa, if they are diagnosed within 12 months of each other.

Benign tumours are not considered comorbidities.

Co-morbidity list

AIDS	Acute myocardial	Cancer
Cerebrovascular disease	Congestive heart failure	Chronic obstructive pulmonary disease
Dementia	Diabetes	Diabetes + complications
Hemiplegia or Paraplegia	Mild liver disease	Moderate/severe liver disease
Peptic ulcer	Peripheral vascular disease	Renal disease
Rheumatoid disease		

Diagnosis Basis

Confirmation of cancer through clinical or histological tests

Elective Status*Emergency Admission*

A patient admitted to hospital at short notice because of clinical need or if alternative care is not available.

Elective Admission

A patient who is admitted into hospital for treatment from the waiting list.

Had surgery

Includes Queensland residents of all ages diagnosed with invasive pancreatic, biliary tract or small intestinal cancer in the pancreaticoduodenectomy cohort time period.

Hospital and Health Service (HHS)

For residence considerations, the Hospital and Health Service is a geographic area defined by a collection of Statistical Local Areas (SLA). For public hospitals and health service facilities, the term Hospital and Health Service is synonymous with a group of Queensland Health facilities and staff responsible for providing and delivering health resources and services to an area which may consist of one or more residential areas.

Queensland Unknown residence includes addresses reported as overseas, unknown or not fixed.

Indigenous Status

A measure of whether a person identifies as being of Aboriginal or Torres Strait Islander origin.

Median age

The age that divides a population into two halves: one older than the median, the other younger than the median.

Patient flows

Col% is used to show the distribution of residence for the total group of patients who were operated on by a single HHS. Row% is used to show the proportion of patients residing in a given HHS who also receive their surgery in the same HHS, and what proportion had their surgery in another HHS.

Number of procedures

Includes Queensland residents of all ages diagnosed with invasive intestinal, biliary tract & pancreatic cancer who underwent a relevant pancreaticoduodenectomy procedure. The procedure could have occurred at any time with no counting rules applied as outlined on page 2.

Qld %

Percentage of the Queensland total.

Remoteness

The relative remoteness of residence at time of diagnosis, based on the Australian Standard Geographical Classification (ASGC). This document classifies remoteness into four groups: Major City, Inner Regional, Outer Regional, and Remote/Very remote.

Row %

Percentage of the row total

Sex

Refers to the biological and physiological characteristics that define men and women.

Socioeconomic status

Socioeconomic classification is based on the Socio-Economic Indexes for Areas (SEIFA), a census-based measure of social and economic well-being developed by the Australian Bureau of Statistics (ABS) and aggregated at the level of Statistical Local Areas (SLA).

The ABS uses SEIFA scores to rank regions into ten groups or deciles numbered 1 to 10, with 1 being the most disadvantaged group and 10 being the most affluent group. This ranking is useful at the national level, but the number of people in each decile often becomes too small for meaningful comparisons when applied to a subset of the population. For this reason, this document further aggregates SEIFA deciles into 3 socioeconomic groups:

SEIFA Group	Decile	Percentage of population (approximate)
Affluent	1-2	20%
Middle	3-8	60%
Disadvantaged	9-10	20%

The proportion of cases in each group will vary depending on the subset of the population being examined. For example, the proportion in the Disadvantaged group may be higher than 20% when the data is limited to cancers that are more common in poor compared to rich people.

For more information

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