



Surgery in Pancreatic Cancer

A practical guide for health professionals across England,
Wales, Scotland and Northern Ireland

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Declaration of Conflicts of Interest

- I have no conflicts of interest to declare.

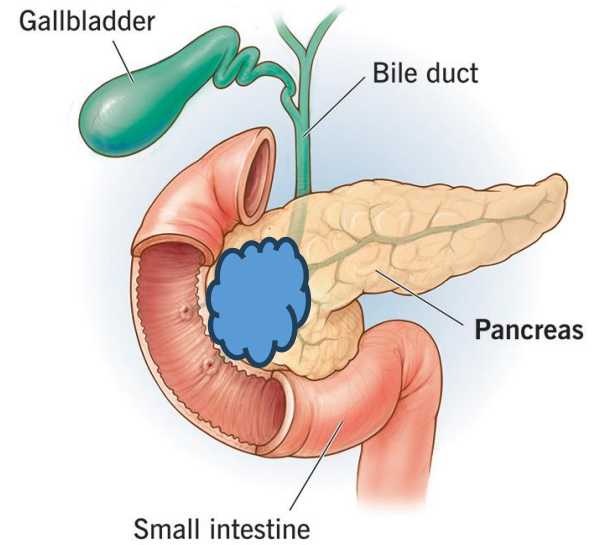
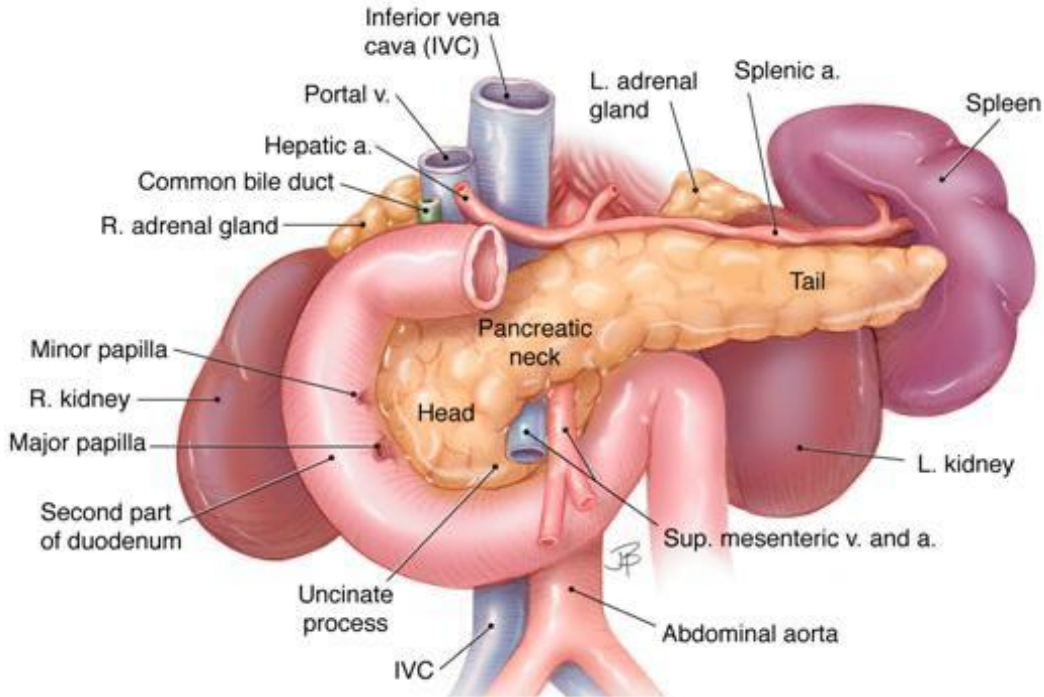
Learning Outcomes

- **Basic anatomy** of the pancreas and key neighbouring structures.
- How to **select patients for pancreatic surgery** – Staging
- **Optimisation for surgery**
 - Supportive care, including prehabilitation
 - Straight to surgery (fast track surgery)
 - Neoadjuvant therapy
- **Types of pancreatic surgery**
 - Whipples/PPPD
 - Distal (left sided pancreatectomy)
 - Total pancreatectomy
 - Bypass Surgery
- **Post Operative**
 - Common complications
 - Adjuvant treatment
 - Long term issues
- **Key take home messages**

Introduction and Context

- Pancreatic cancer often presents late and requires multidisciplinary care.
- Surgical removal offers the only potential for cure in selected patients.
- Good outcomes from surgery requires:
 - Prompt diagnosis & staging
 - High quality pre-op supportive care and prehabilitation
 - Appropriate Peri-operative care
 - Neoadjuvant or adjuvant therapy
 - Ongoing support

Basic Anatomy of the Pancreas



What does the pancreas do?

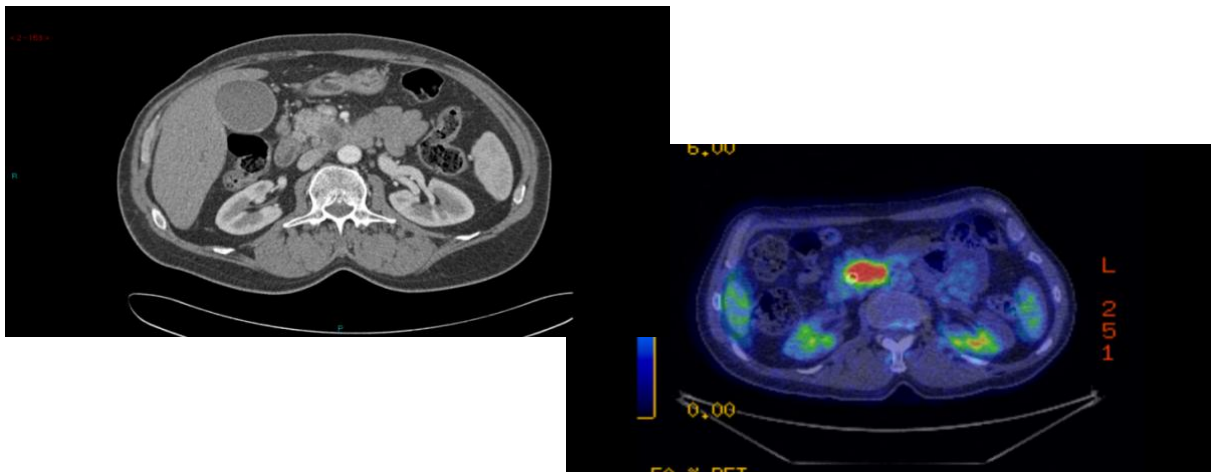
Two main roles:

- Digestion – produces enzymes (lipase, protease and lipase)
- Hormones – produces hormones, the most important is insulin to control blood sugar

Diagnosis and Staging

- Diagnosis is normally achieved by CT
 - Ensure the CT occurs before biliary stent (ERCP)
- Staging - ie to work out who is operable
 - **CT chest, abdo and pelvis** – dual phase
 - If no metastatic disease on CT, looking for occult distant disease:*
 - **PET-CT**
 - +/- **MRI liver**

PET CT – identification of distant disease



Identifies occult metastatic disease in additional 10%

Upstages the disease and prevents futile surgery



1.3 Staging

- 1.3.1 For people with newly diagnosed pancreatic cancer who have not had a pancreatic protocol CT scan, offer a pancreatic protocol CT scan that includes the chest, abdomen and pelvis.
- 1.3.2 Offer fluorodeoxyglucose-positron emission tomography/CT (FDG-PET/CT) to people with localised disease on CT who will be having cancer treatment (surgery, radiotherapy or systemic therapy).

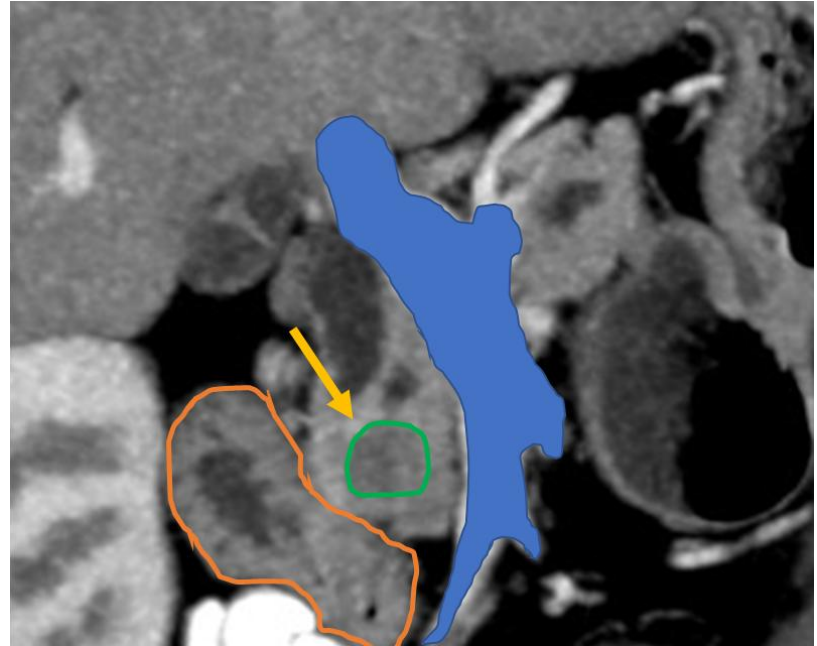
Liver MRI – identification of liver mets



- Most accurate modality for assessing liver metastases
- Some units routinely use MRI to stage the liver
- Others units have a selective policy
- *In CT-negative patients*
 - *MRI changed management in 2–23%*
- *In CT-indeterminate cases*
 - *MRI changed management in 12–45%*

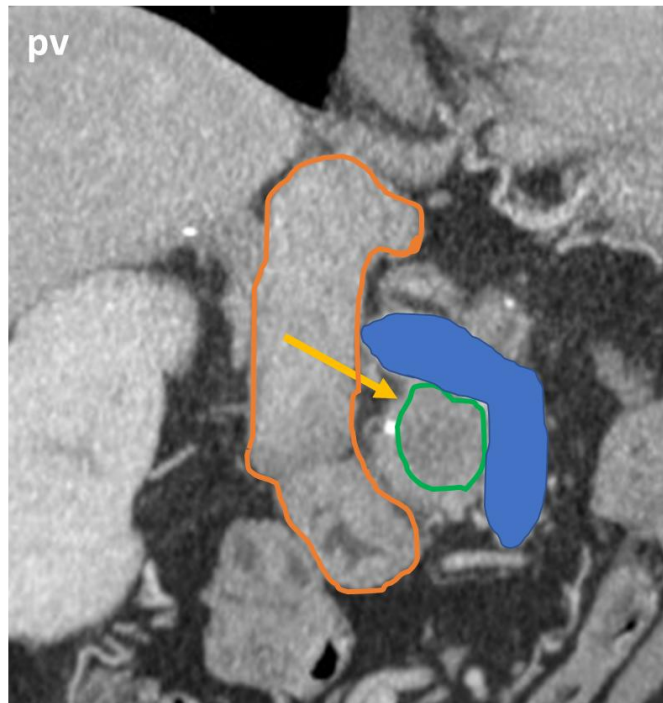
Working out who is operable. Staging Extent of local disease

Clearly operable

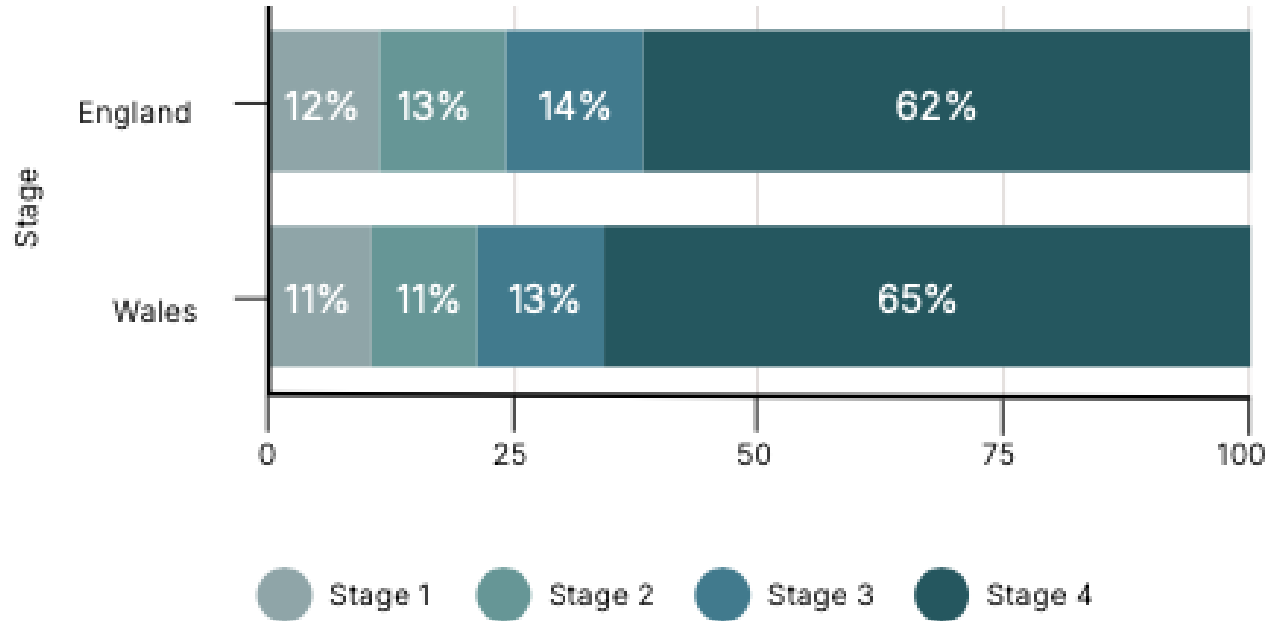


Working out who is operable. Staging Extent of local disease

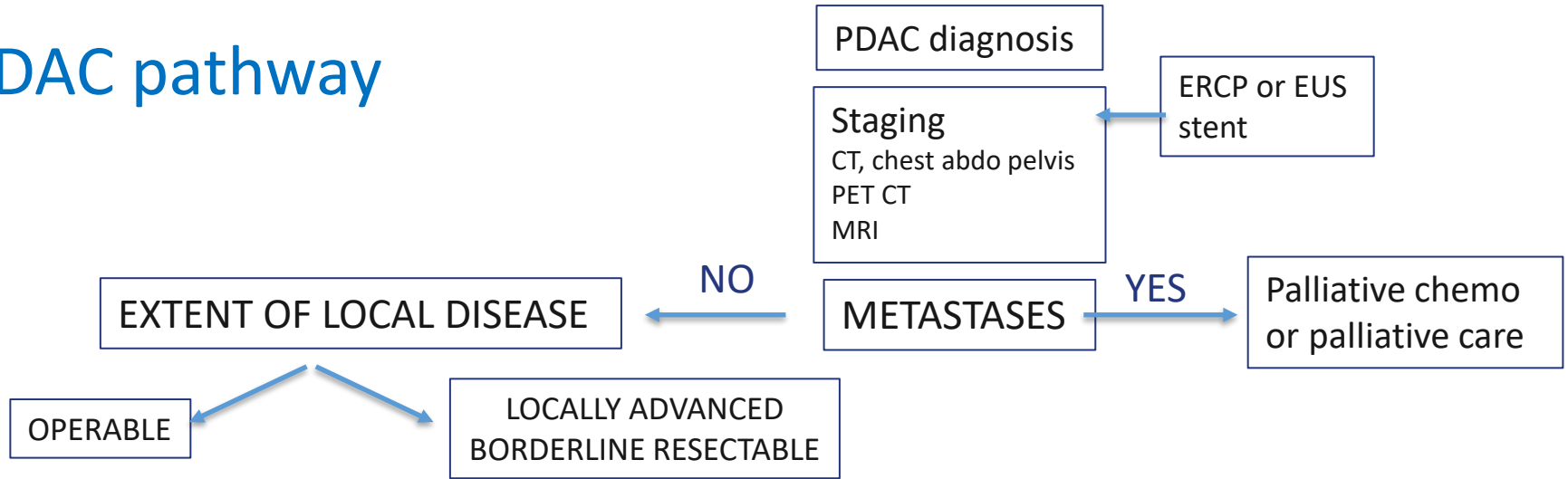
Borderline resectable
(& locally advanced)



PDAC Incidence of stage at diagnosis



PDAC pathway



Selection for surgery

- Disease factors – *addressed*
- Patient factors - physiological fitness, nutrition, comorbidities and personal priorities
- Shared decision making - clear discussion of risks, benefits and alternatives
- *Holistic Support*

Optimisation for Surgery



Nutrition: dietitian-led assessment, pancreatic enzyme replacement therapy (PERT) and glycaemic optimisation

Management of jaundice: drainage of the bile duct when clinically indicated



Anaesthetic review. Assessment of fitness

Prehabilitation .



CNS support



Fast Track Surgery – straight to surgery

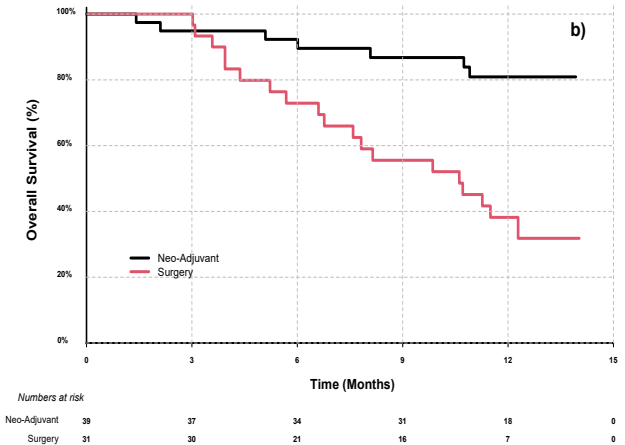
- Clearly operable
- Rapid referral and streamlined work-up to minimise delays from diagnosis to operation.
 - May result in some tests not performed, especially PET CT
- No pre – operative biliary drainage
 - Avoids complications of ERCP , especially pancreatitis
- In the England and Wales Audit 2025, stent placed in 53% of patients prior to surgery

Neoadjuvant Treatment

Chemotherapy or chemoradiotherapy prior to surgery

- Systemic chemotherapy to shrink the tumour or treat early microscopic spread.
- Common options include multi-drug combinations such as fluorouracil, leucovorin, irinotecan and oxaliplatin (FOLRIRIONOX).
- Short-course radiotherapy may be considered in selected centres.

ESPAC 5



Prehabilitation in surgery is a **time-limited, multimodal programme delivered between**

Prehabilitation before pancreatic cancer surgery

- What is it?

Prehabilitation in surgery is a **time-limited, multimodal programme delivered between the decision to operate and the day of surgery** that aims to **increase a patient's physiological reserve and resilience** so they tolerate the operation better and recover faster. It is usually **individualised and risk-stratified**

Prehabilitation before pancreatic cancer surgery: why it matters?

- **Benefits seen from studies** : better fitness; fewer problems after surgery; shorter time in hospital
- **Who benefits most:** people with weight loss, poor appetite, weakness, breathlessness, low activity, or long waits before surgery.
- **Most impact:** at least four weeks, longer if possible during treatment before surgery
- How to keep it safe: start low, build up slowly

A simple prehabilitation plan



EXERCISE

Move most days: brisk walking or cycling 30–45 minutes, five days a week



Add **strength work** two or three times a week: sit-to-stand, wall push-ups, step-ups, light weights or bands



Train breathing muscles: use the handheld trainer for 30 strong breaths once or twice a day; practice deep breaths and coughs.



NUTRITION OPTIMISATION

Eat enough, especially protein: three meals and one or two snacks each day; add high-protein drinks if weight is falling.



Use **pancreatic enzyme** capsules with meals and snacks. Drink six to eight glasses of fluid daily; keep blood sugar steady



PSYCHOLOGICAL SUPPORT/ WELLBEING

Anxiety management, expectation-setting, sleep hygiene

LIFESTYLE CHANGE



Stop smoking, keep alcohol very low, sleep well, and learn the ward plan (early sitting up, early drinking and eating, early walking).

MEDICAL OPTIMISATION

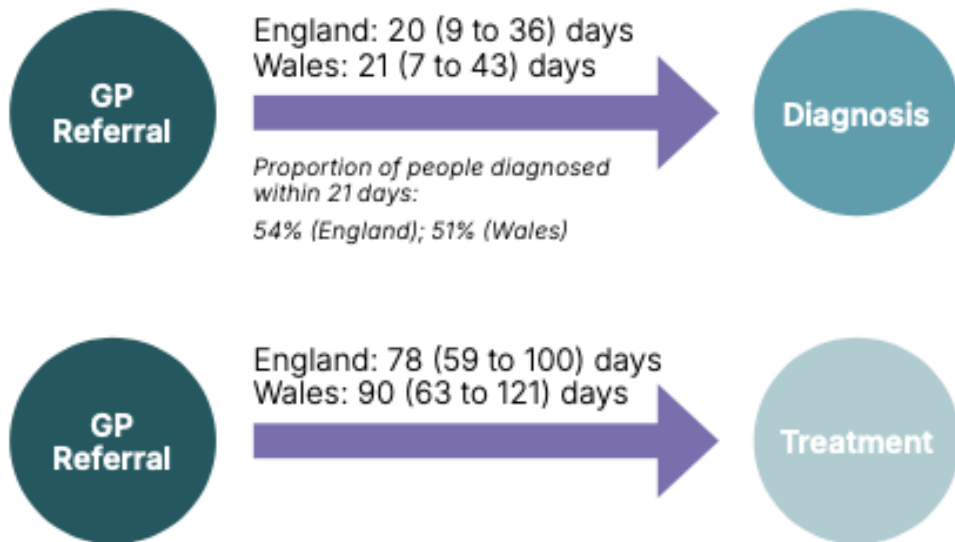


comorbidity review, medication adjustment, frailty-informed interventions



Track progress weekly: distance walked in six minutes, sit-to-stand count, and body weight.

Delays to treatment, 21 day pathway

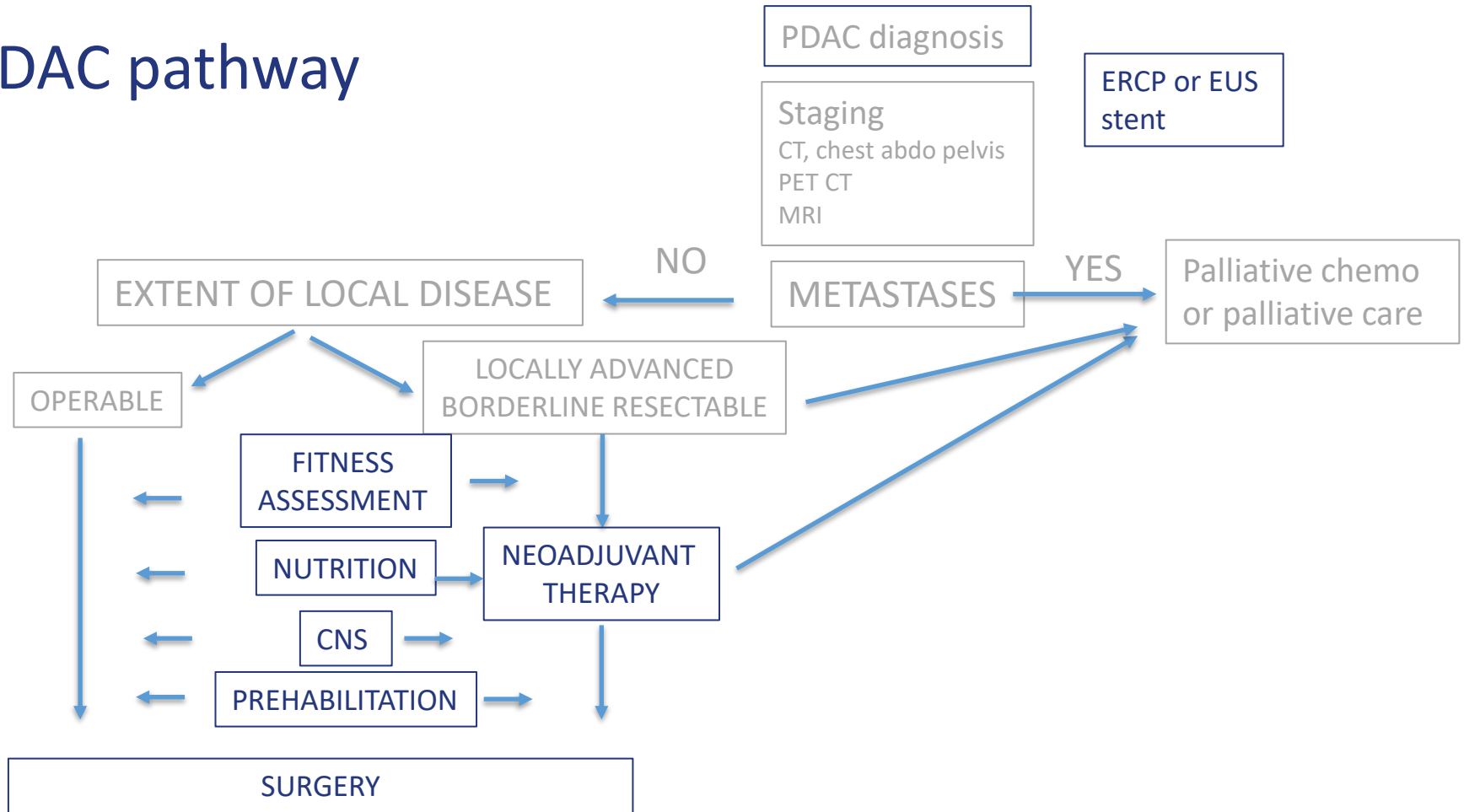


Day	Pathway step
0	GP referral and locally agreed minimum dataset
	Primary care patient information resources provided, co-developed with patients
5	Straight to CT and bloods
	Commence PERT if required
8	Secondary care patient information resources and support provided, co-developed with patients
	Clinical assessment of CT results, using PACT-UK radiology reporting pro-forma if required
10	Booking of MRI, MRCP, PET-CT, laparoscopy / laparoscopic US as required
	MDT for review and planning of diagnostic tests and potential treatment options
16	MRI or MRCP carried out
	PET-CT or laparoscopy / laparoscopic ultrasound
21	ERCp or EUS guided FNA Biopsy
	Cancer ruled out or diagnosis confirmed with patient, further support and signposting provided
21	Treatment and care options discussed at multi-disciplinary outpatient clinic

Waiting for Treatment and Survival

- **Day 100:** Only **50%** of the original cohort are alive.
- **Day 100:** **25%** of the original cohort are still waiting to begin active treatment.
- **Implication:** Among those alive at day 100, **~1 in 2** have **not** started treatment.

PDAC pathway



Poll

- **Q.** A fit 62 year old woman presented with jaundice and weight loss and has been diagnosed with a pancreatic tumour in the head of her pancreas. Imaging shows no metastatic disease and there is no local blood vessels involvement. What are the appropriate next steps
- A. Please select all that apply
- Refer for neoadjuvant therapy
 - Start supportive measures (PERT, nutrition, CNS support)
 - Consider prehabilitation
 - Place a biliary stent to relieve her jaundice
 - Consider straight to surgery (fast track surgery)

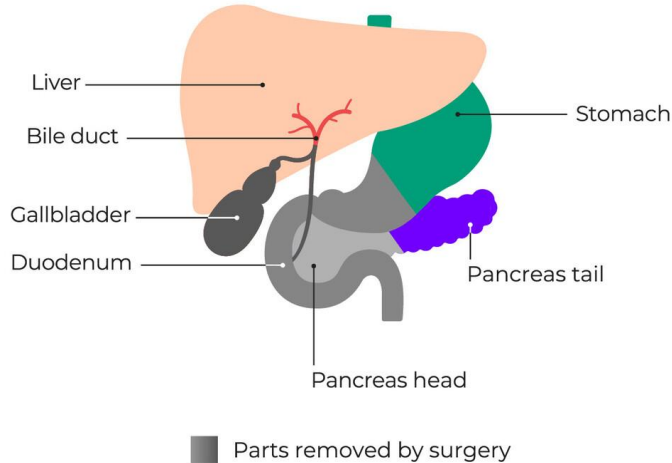
Top tips for pre-operative

- Ensure supportive care commenced Day 1
- Organise the tests asap, package the tests, don't wait for the first result to request the next test!
- Avoid unnecessary repeat MDT visits

Whipple / Pylorus preserving pancreaticoduodenectomy

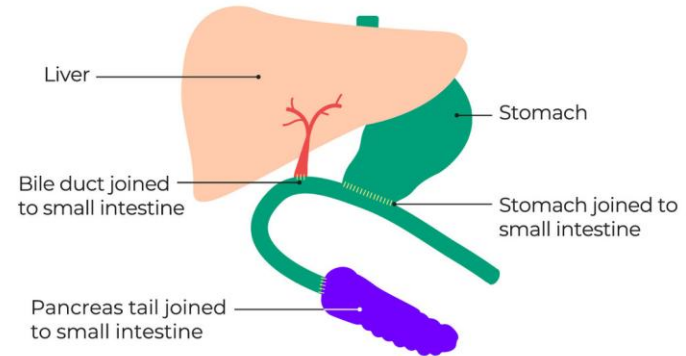
Operations can be performed open, laparoscopic or robotic

Tumour in the head of pancreas



Parts removed

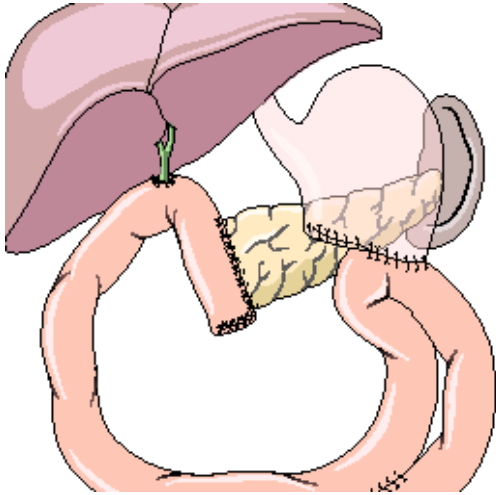
Head of pancreas (containing tumour), duodenum,
Lower 1/3 bile duct, gallbladder



Three Joins

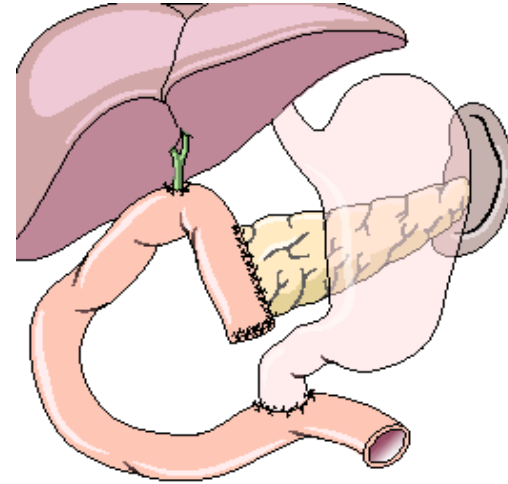
Pancreas to bowel – pancreaticojejunostomy = PJ
Bile duct to bowel – hepaticojejunostomy = HJ
Stomach to bowel – gastrojejunostomy = GJ

What is the difference between a Whipple and pylorus preserving pancreaticoduodenectomy (PPPD)



Whipple

lower 1/3 of the stomach is removed.

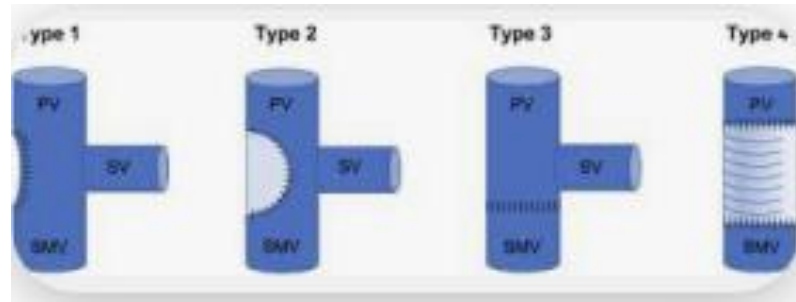
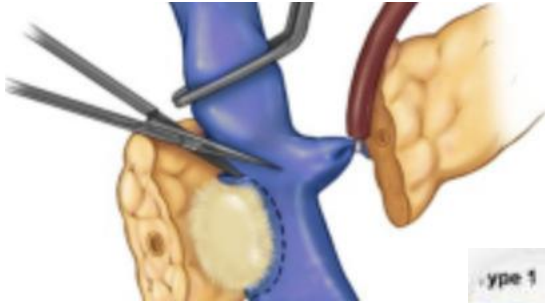


PPPD

Whole stomach is preserved

Whipple / Pylorus preserving pancreaticoduodenectomy

Venous and / or arterial resection



Arterial resections are rarer
Weaker evidence to support

Whipple / Pylorus preserving pancreaticoduodenectomy

Common complications

Mortality 2-4%

Morbidity 70%

Pancreatic fistula (leak from the pancreatic join)

Leaks from bile duct and stomach joins (hepaticojejunostomy / gastrojejunostomy)

Bleeding

Delayed gastric emptying

Pancreatic insufficiency

Diabetes

Rate of complications post PPPD whipple

- 2375 (6186) *low risk* cases
- 1.6% mortality
- **71% morbidity**
- POPF B & C - 19%
- Severe complications CD III – 30%



Benchmarks in Pancreatic Surgery

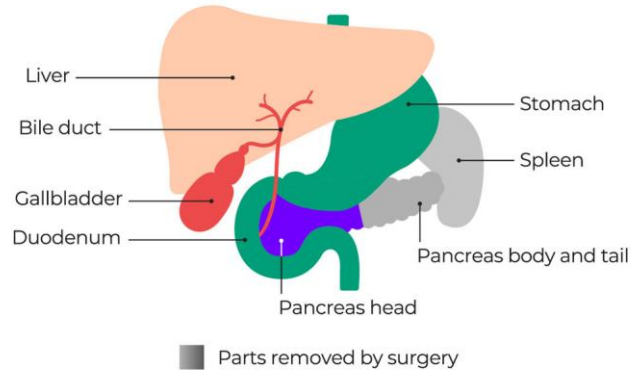
A Novel Tool for Unbiased Outcome Comparisons

Patricia Sanchez-Velazquez, DOI: 10.1097/SLA

Distal (left sided) pancreatectomy & splenectomy

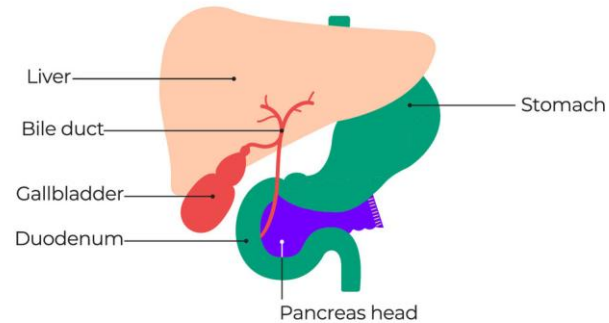
can be performed open, laparoscopic or robotic

Tumour in the tail of pancreas



Parts removed

Tail of pancreas and spleen



No joins

Distal (left sided) pancreatectomy & splenectomy

Complications

Mortality 1%

Morbidity 30-50%

Pancreatic leak

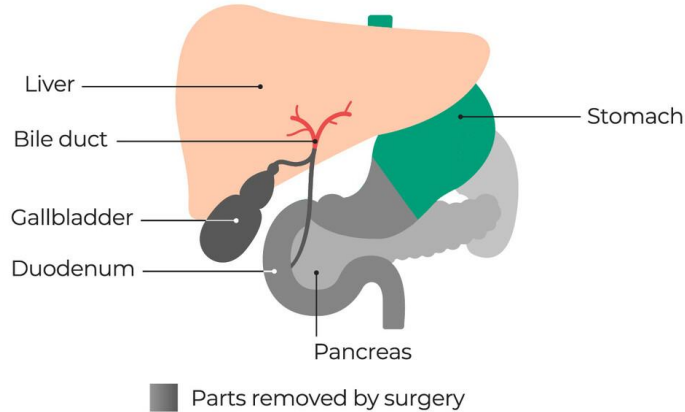
Bleeding

50% insulin dependent diabetes

Post splenectomy sepsis

Total Pancreatectomy and splenectomy

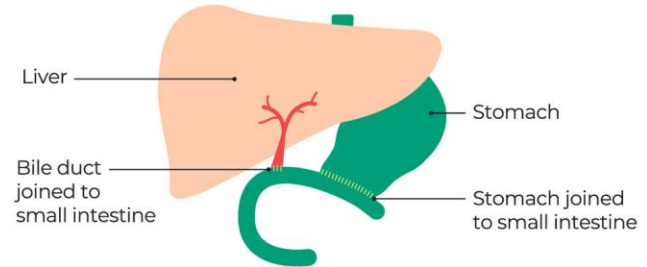
Rare for pancreatic cancer



Parts removed

Whole pancreas duodenum,

Lower 1/3 bile duct, gallbladder and spleen



Two Joins

Bile duct to bowel – hepaticojejunostomy = HJ

Stomach to bowel – gastrojejunostomy = GJ

Total Pancreatectomy and splenectomy

Common complications

1% mortality

Morbidity

Leak from bile duct or stomach joins hepaticojejunostomy / gastrojejunostomy

Bleeding

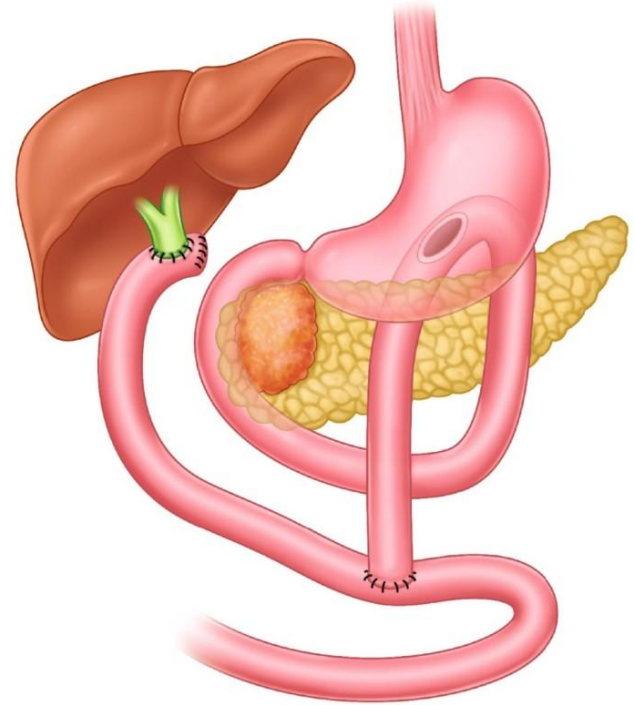
Delayed gastric emptying

Pancreatic insufficiency

100% Insulin dependent diabetes (brittle)

Palliative double bypass surgery

- When planned resection surgery isn't possible:
 - Distant disease seen (metastases)
 - Locally advanced (local tumour more extensive)
- Classical
 - Both bile duct and stomach anastomosis
 - (to bypass the blockage of the tumour)
 - Can add a coeliac plexus block
- Alternatives
 - If person already has a metal stent inserted, then in this situation a single bypass to the stomach is only performed



Enhanced Recovery After Surgery (ERAS)

- Starts pre surgery (prehabilitation)
- Intraoperative
 - **Anaesthesia/analgesia:** standardised, multimodal, opioid-sparing
 - **Fluids & temperature:** goal-directed fluids; keep normothermia.
 - **Bundles:** prophylactic antibiotics; manage blood glucose

Enhanced Recovery After Surgery (ERAS)

- **Post-op (ward pathway)**
 - **Feeding:** start oral fluids within hours; advance to soft/normal diet as tolerated; use supplements; avoid routine feeding tubes or parenteral nutrition unless intolerance/high risk.
 - **Glycaemia:** protocolised insulin to avoid hyperglycaemia.
 - **Mobilisation:** out of bed day 0/1; set daily time-out-of-bed targets (≥ 2 h on day 1, increase thereafter).
 - **Analgesia:** continue multimodal (paracetamol/NSAID if safe; minimise opioids).
 - **PONV/ileus:** use anti-sickness bundle and routine laxatives.
 - **Drains:** remove early, local protocols; watch for fistula, delayed gastric emptying, post-pancreatectomy haemorrhage.
 - **VTE prophylaxis:** continue in hospital; consider **28-day** extended prophylaxis after discharge for major cancer surgery.
- **Aftercare**
 - written “red flags” and escalation route; dietitian follow-up; early clinic/MDT to keep adjuvant therapy on schedule.
- **Implementation & quality**
 - **Team & audit:** run a multidisciplinary pathway, track compliance with the pancreatic ERAS items (aim ≥ 70 – 80%); monitor complications and length of stay .

General points about recovery after surgery

- 7 to 14 day hospital stay
- Prolonged if complications

- Once home recovery is initially slow
- Advise patients and carers around 4 months

- Nutrition and PERT is the biggest issue

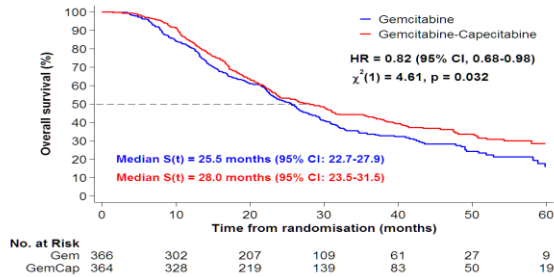
Top Tips for Supporting People Undergoing Pancreatic Surgery

- Use clear, jargon-free explanations; check understanding and invite questions.
- At the first contact
 - Start symptom control
 - pancreatic enzyme replacement therapy, nutrition
 - and physical activity support (prehab)
 - **do not wait** for the operation date.
- Prepare people and families for the normal pace of recovery and common bumps in the road.

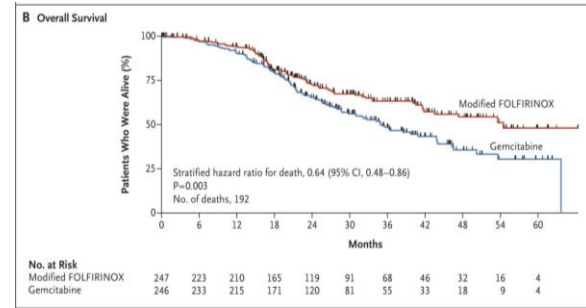
Adjuvant Treatment (Chemotherapy After Surgery)

- Chemotherapy to reduce the risk of cancer returning, tailored to individual recovery and pathology results.

ESPAC 4



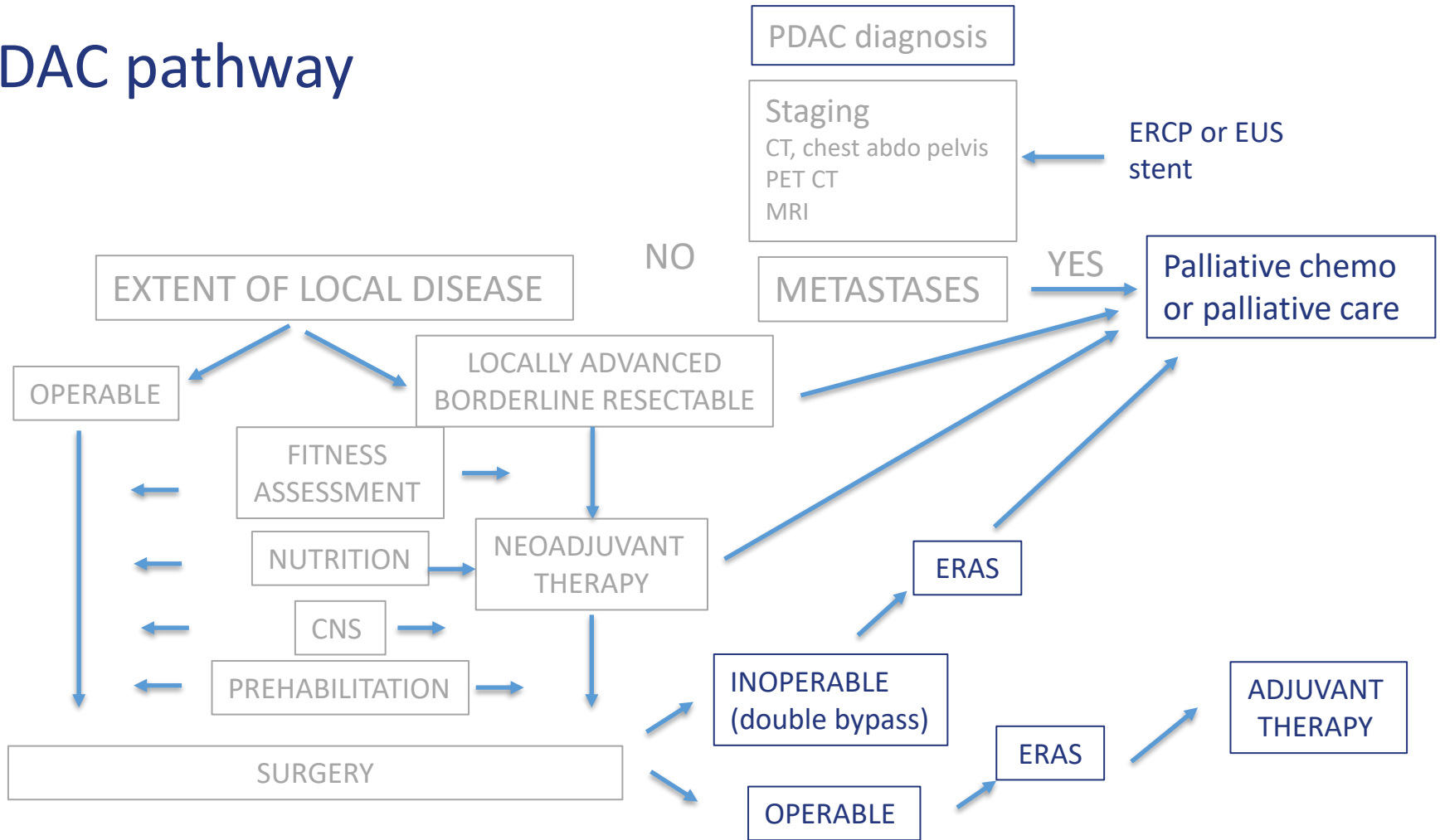
PRODIGE 24/CCTG PS.6 trial



Adjuvant therapy (NPaCA)

- England: **62%** (IQR 52–69%); ↑ from **53%** in 2015
- Wales: **72%**

PDAC pathway



Poll 3

Q. A 68 year old man underwent surgery with the intent of having a Whipple procedure. Unfortunately a lesion was seen in the liver and an intraoperative biopsy confirmed metastatic disease. He has undergone bypass surgery.

A. Please tick all that apply

- He shouldn't received ERAS support
- He should be referred to palliative care
- A discussion needs to be held with the patient and his close relatives to determine his wishes and whether he wants to see an oncologist to discuss palliative chemotherapy.
- He needs an early CT scan to restage his disease

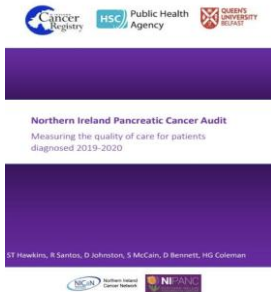
Poll 4

- Q. Are you are aware of the findings of your relevant national pancreas cancer audit? (Scotland and Northern Ireland have their own audits, England and Wales are joint)
- A YES or NO

Audits



<https://www.natcan.org.uk/audits/pancreatic/>



<https://www.pancreaticcancer.org.uk/wp-content/uploads/2023/10/Northern-Ireland-Audit-Mark-Taylor.pdf>



Scottish HepatoPancreatoBiliary
Network

<https://www.nn.nhs.scot/shpbn/professionals/audit/>

Key Takeaway Messages

- Surgery offers the best chance of long-term survival for selected people.
- Supportive care starts at day 1, on diagnosis, irrespective of stage
 - Nutrition, PERT, analgesia, fitness optimisation and CNS support
- Need to map local pathways to improve time to diagnosis and time to treatment
 - Discover where your delays are,
 - Read and act upon your own audit data
- Majority of PDAC patients require either adjuvant or neoadjuvant chemotherapy
- Use clear, jargon-free explanations; check understanding and invite questions.

Conclusions

- Comprehensive, rapid person-centred pathways are essential from diagnosis through recovery.
- The choice of operation and timing are guided by tumour factors and person fitness.
- Rapid, co-ordinated care and clear communication are the foundations of success.