

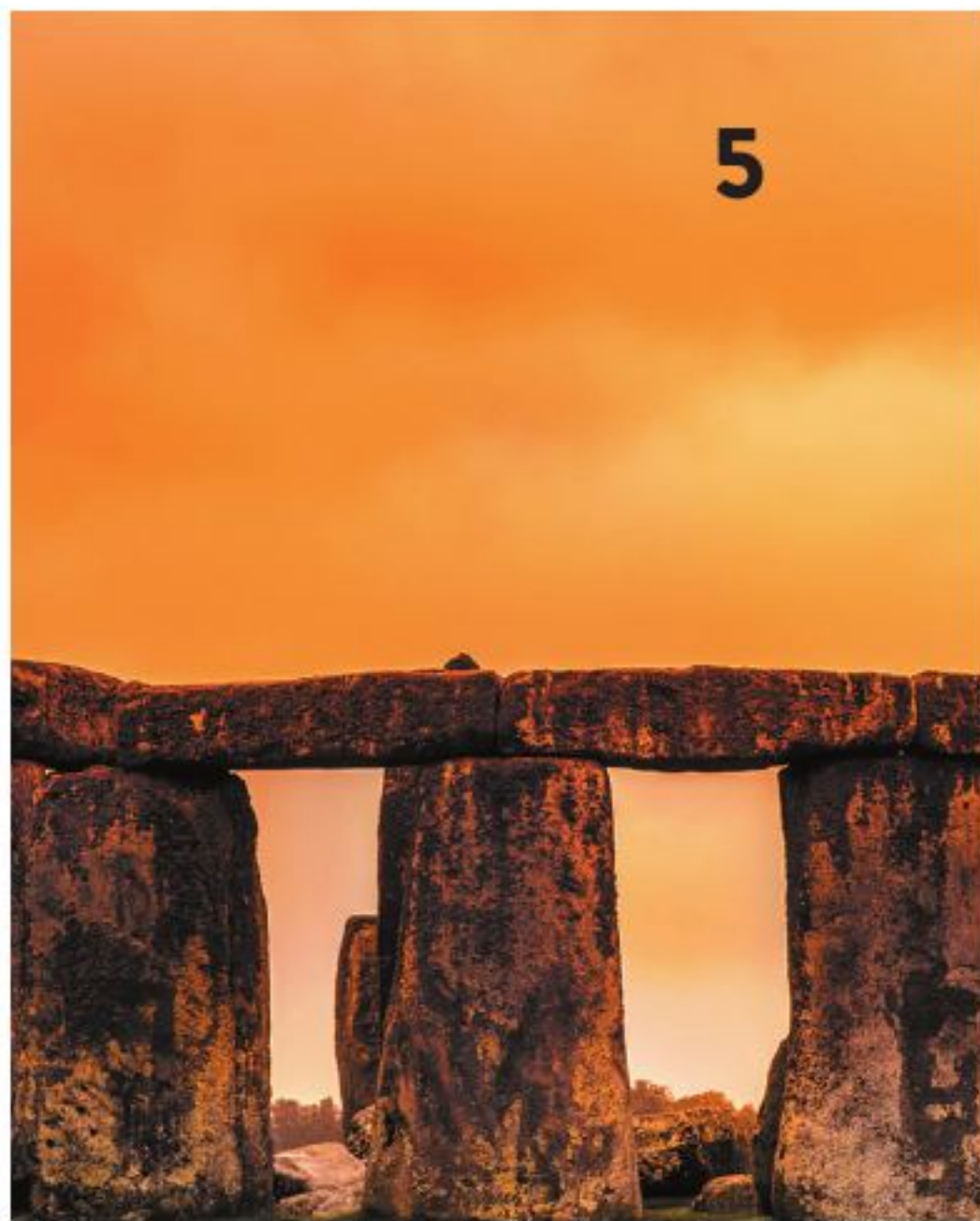
BY BITO HEALTH

PANCREATIC CANCER

PANCREATIC CANCER AND SURGERY

This booklet has been created to provide you with all the necessary information about pancreatic cancer in a way that is easy to understand. Our goal is to empower you every step of your cancer journey so that you can make informed choices, anticipate the side effects of treatment and lifestyle changes, and ultimately achieve the best possible outcome.

Let's start the journey. Let's Bring It On!



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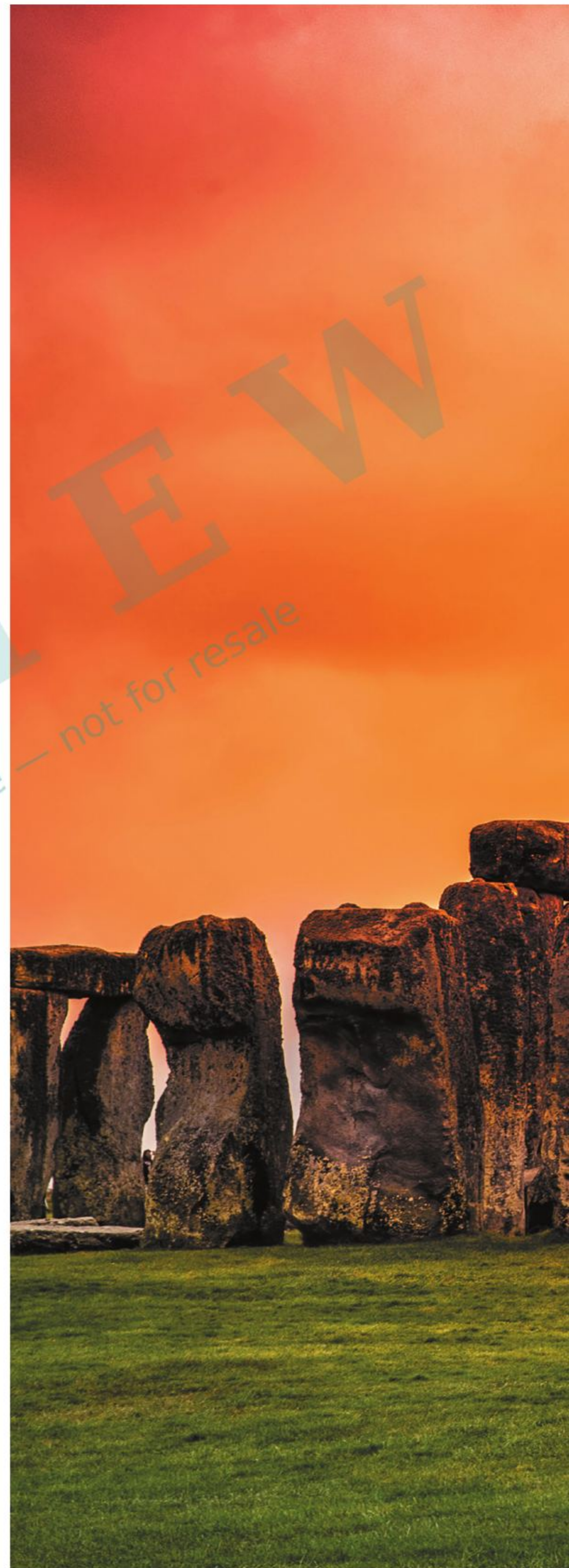
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INTRODUCTION AND RISK FACTORS

Pancreatic cancer is a type of cancer that affects the pancreas, a glandular organ behind the stomach that produces digestive enzymes and hormones. According to the American Cancer Society, pancreatic cancer affects about 64,000 people in the United States annually. It accounts for about 3% of all cancers. The average lifetime risk of developing pancreatic cancer is about 1 in 64, but it may vary depending on certain factors. Pancreatic cancer is slightly more common in men than women and more prevalent among Black Americans than other racial groups. Some risk factors for pancreatic cancer include age, smoking, obesity, diabetes, chronic pancreatitis, family history and genetic mutations.

“Obstacles are those frightful things you see when you take your eyes off your goal.”

Henry Ford



WHERE, WHAT, SYMPTOMS, AND DIAGNOSIS

Where is the pancreas?

The pancreas is in the abdomen, behind the stomach, and measures about 15 to 20 cm long. It has different anatomical sections, such as the head, the neck, the body, and the tail. The head of the pancreas connects to the duodenum, part of the small intestine, and the tail of the pancreas touches the spleen. The pancreas serves two primary functions in the body: it produces digestive enzymes that help break down food in the small intestine, and it produces hormones, including insulin, that regulate blood sugar levels.

What is pancreatic cancer?

The most common form of pancreatic cancer is pancreatic ductal adenocarcinoma, which starts in the cells that line the ducts that carry enzymes out of the pancreas. Several pre-malignant pancreatic disease conditions increase the risk of developing pancreatic cancer. These include cysts and tumors that grow in the pancreas or its ducts, such as intraductal papillary-mucinous neoplasms (IPMNs), mucinous cystic neoplasms (MCNs), and pancreatic intraepithelial neoplasia (PanIN). Some lesions may be benign, but others may have dysplasia or cancer cells. Early detection and treatment of pre-malignant pancreatic disease can prevent or delay the progression of invasive pancreatic cancer.

What are the symptoms and signs of pancreatic cancer?

It is essential to know that the symptoms of pancreatic cancer can vary, and some people with cancer may not have any symptoms. Some of the signs and symptoms of pancreatic cancer are yellowing of your skin and the whites of your eyes (jaundice), light-colored stools, dark-colored urine, itchy skin, abdominal pain that radiates to your back, loss of appetite or unintended weight loss, a new diagnosis of diabetes or existing diabetes that's becoming more difficult to control, blood clots, fatigue, and others.

These symptoms may not appear until the cancer is advanced or has spread to other organs.

Jaundice is one of the first symptoms of pancreatic cancer, especially if it starts in the head of the pancreas near the common bile duct. The tumor can block this duct, causing bilirubin to build up in the body.

How is pancreatic cancer diagnosed?

Doctors may use various tests to diagnose pancreatic cancer

Blood tests:

No blood tests can tell whether you have pancreatic cancer. Blood tests can check for tumor markers, such as CA19-9, that pancreatic cancer cells may produce, raising suspicion about possible pancreatic cancer.

Imaging studies

Radiological studies, such as Ultrasound, CT scan, or Magnetic resonance cholangiopancreatography (MRCP), can show if there is a tumor in the pancreas or if it has spread to other organs.

Endoscopic retrograde cholangiopancreatography (ERCP)

ERCP is a medical procedure involving an endoscope and X-rays to diagnose and treat issues in the bile and pancreatic ducts. This procedure helps manage various health conditions that affect the smooth flow of bile or pancreatic juice, such as tumors, infections, gallstones, or blockages. Additionally, ERCP can assist in performing interventions like getting tissue samples for biopsy or placing stents to open up narrowed ducts.

“Believe you can and you're halfway there.”

Theodore Roosevelt

Endoscopic Ultrasound

Endoscopic ultrasound (EUS) is a valuable method for detecting pancreatic cancer. It can identify small tumors that other imaging techniques might miss and collect tissue samples for further examination. EUS-guided FNA (fine needle aspiration) is the best modality for obtaining a tissue diagnosis. Additionally, EUS can evaluate the tumor's local spread and involvement of nearby structures, including blood vessels, lymph nodes, and bile ducts. This information helps determine the extent of the cancer and the best approach for treatment.

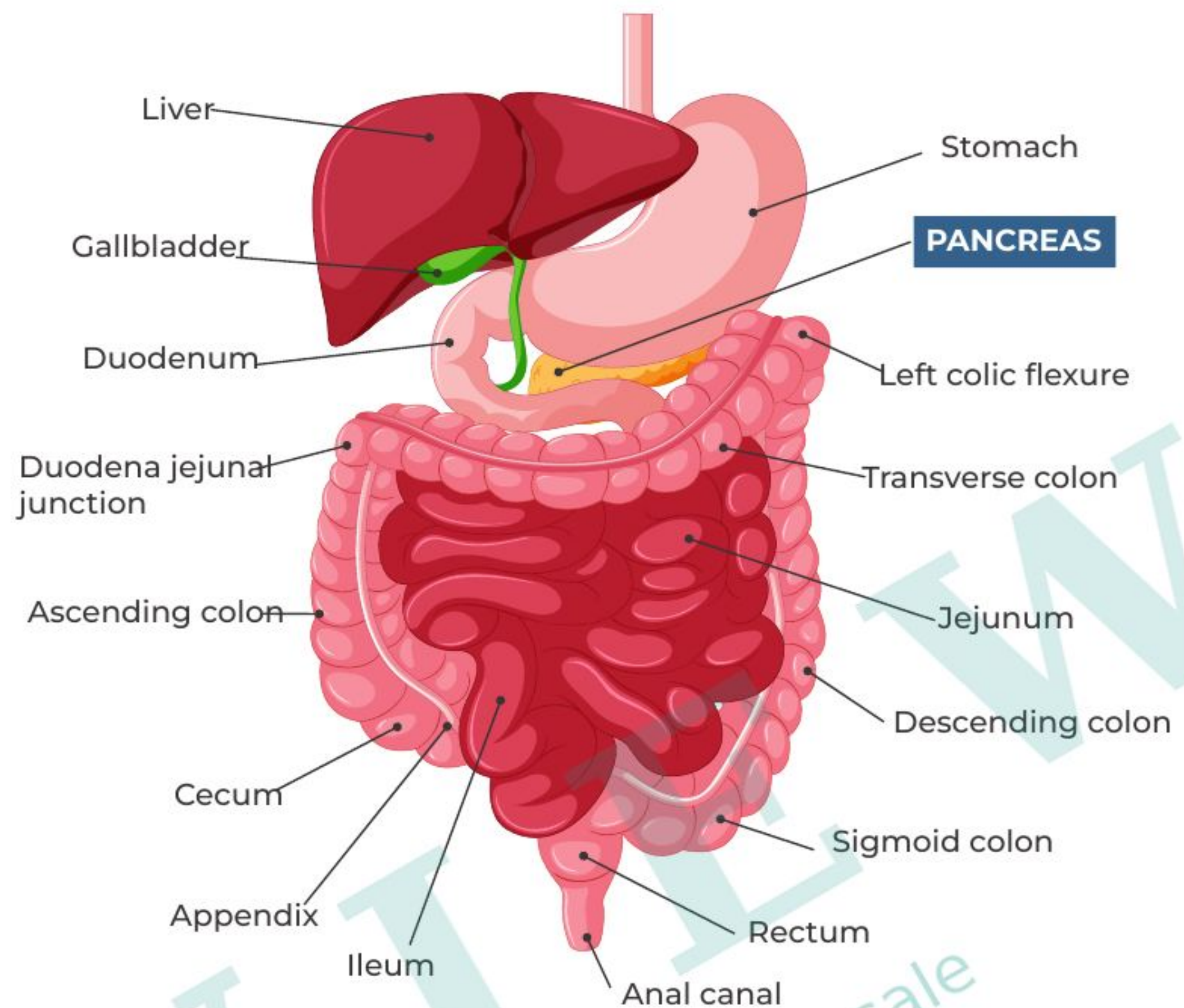
Pathological diagnosis of pancreatic cancer

A biopsy is a procedure to remove a small sample of tissue from the pancreas and examine it under a microscope to confirm if it is cancerous. Typically, the pathology report will include information about the **type** (ductal adenocarcinoma, mucinous adenocarcinoma, intraductal papillary-mucinous carcinoma, etc.) and **grade** (well, moderately, poorly differentiated) of cancer. Sometimes, genetic testing may also be done to look for inherited DNA changes that increase the risk of pancreatic cancer.

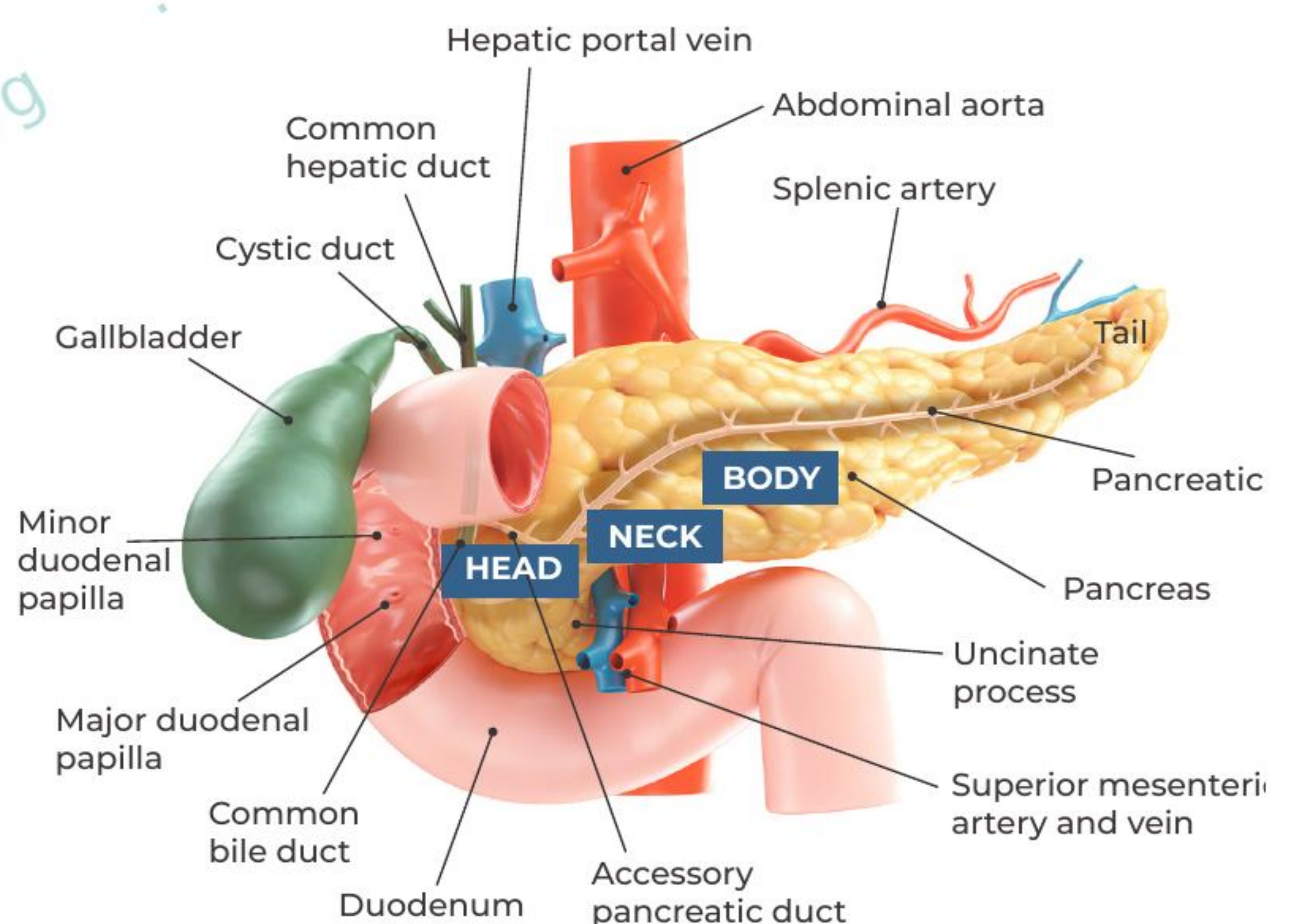
Screening for pancreatic cancer

Screening tests for pancreatic cancer are typically recommended for individuals with an elevated risk of the disease, such as those with a family history of the disease, genetic mutations, or chronic pancreatitis. However, it is not widely recommended due to the potential for false-positive or false-negative results. Inaccurate results can lead to unnecessary interventions or missed diagnoses, so it is crucial to seek advice from a pancreatic specialist before making any decisions.

INTERNAL HUMAN DIGESTIVE SYSTEM



HUMAN PANCREAS



STAGING

What other tests do I need after the diagnosis is made?

Once the diagnosis of pancreatic cancer is established, the local and distant extent of the disease must be determined to provide a framework for discussing therapy and prognosis. Hence, your doctor may order tests to determine the stage of your cancer. By knowing the stage of your cancer, your healthcare team can plan the best treatment options and predict your chances of survival. Different staging modalities can provide additional information about the tumor size, location, lymph node involvement, and distant metastasis. The most used staging modalities for pancreatic cancer are CT, MRI (Magnetic Resonance Imaging), EUS, and PET (Positron Emission Tomography) scan.

Blood tests:

CA19-9: High CA19-9 levels do not necessarily mean cancer or advanced disease. They can also be a sign of infection, inflammation, or obstruction. CA 19-9 will not be detectable in people lacking the Lewis antigen.

CBC (Complete Blood Count),
Chem 7 (Basic Metabolic Panel),
LFTs (Liver function tests).

CT scan (Computer Tomography):

CT scan is an X-ray that produces detailed images of the abdomen and chest. It can show the size and shape of the pancreas, the extent of local invasion, and the presence of metastasis in the liver, lungs, or other organs. CT scan is usually the first choice for staging pancreatic cancer.

MRI (Magnetic Resonance Imaging):

An MRI scan differs from a CT scan because it employs magnetic fields instead of X-rays. This imaging technique can produce highly detailed images of soft tissues and blood vessels. Sometimes, an MRI scan is especially valuable in evaluating the effects of major blood vessels near the pancreas, as this information can inform surgical decisions.

EUS (Endoscopic Ultrasound):

EUS is a procedure that uses a thin, flexible tube with an ultrasound probe at the end. The tube is inserted through the mouth and into the stomach or duodenum, where it can get close to the pancreas. EUS can produce high-resolution images of the pancreas and nearby structures. The doctor can take tissue samples (biopsy) from the tumor or lymph nodes using a fine needle.

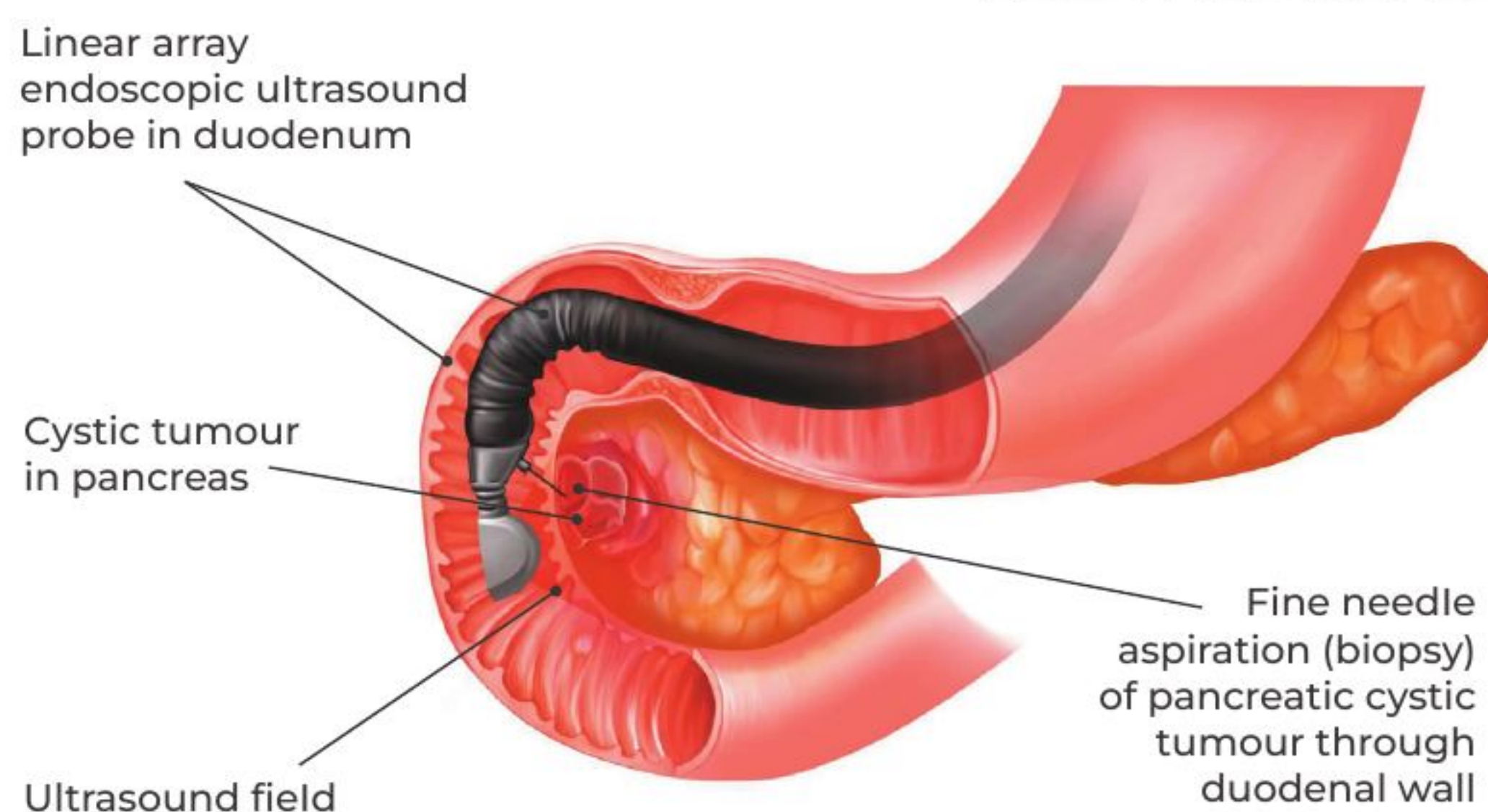
PET scan (Positron Emission Tomography):

A PET scan is a type of nuclear medicine test that uses a radioactive tracer to measure the metabolic activity of cells. The tracer is injected into a vein and travels through the bloodstream. Cancer cells absorb more tracers than normal cells and show up as bright spots on the PET scan. PET scans can help to detect distant metastasis that may not be visible on other imaging tests.

Staging Laparoscopy:

In some instances, it may not be possible to confirm pancreatic cancer through a biopsy. When pancreatic cancer is suspected based on initial imaging studies, the next step is usually to conduct a staging evaluation, which may include a staging laparoscopy. This evaluation helps to determine the extent and resectability of the disease. Suppose the patient appears to have potentially resectable pancreatic cancer after the staging evaluation and can undergo major surgery. In that case, they may not necessarily need a preoperative biopsy to confirm the diagnosis before the surgery.

EUS PANCREAS





MULTIDISCIPLINARY TEAM APPROACH

Specialist physicians you are going to meet

As you undergo treatment for pancreatic cancer, you will work with a team of specialized physicians who collaborate to ensure the best possible outcome for you. This care team coordinates multiple treatment approaches and sequences to treat your cancer effectively. Each team member possesses the experience, competence, compassion, communication skills, and passion to provide exceptional care. We strongly suggest bringing a family member or close friend with you on these visits to assess the human qualities of each specialist and ensure you receive the best possible care.

Gastroenterologist:

A specialized physician to evaluate your pancreas with an endoscopy & endoscopic ultrasound (EUS).

Medical Oncologist:

A specialized physician treats cancer using chemotherapy, targeted therapy, immunotherapy, and other biological therapy. They also provide supportive care and coordinate your treatment plan provided by other specialists.

Radiation Oncologist:

A specialized physician treats cancer using radiation.

Surgeon: General or Surgical Oncologist or Hepato-Pancreato-Biliary (HPB) surgeon

A specialized physician to provide surgical care to treat your cancer.

Questions that you may want to ask your physician.

To make the most of your time with your doctor, preparing a list of questions before your consultation is helpful. Consider asking some basic questions such as

1. Location: Where exactly is my cancer?
2. Diagnosis: Can you explain the pathology diagnosis to me?
3. Stage: How advanced is my cancer? What stage is my cancer?
4. Investigations: What tests do I need before we decide on the treatment options?
5. Treatment options: What are the treatment options for my pancreatic cancer?
6. Complications of treatment: What are the potential side effects of each treatment option?
7. M.D. recommendation: What is the best treatment for me?
8. Second opinion: Should I see another specialist for a second opinion?
9. For surgeon: What is your track record in performing this surgery? How many such surgeries have you performed in the last year? Can you describe a typical course of a successful surgery, hospital stay, and after-surgery recovery? What and when was your recent major complication?"
10. Other resources: Can I take any brochures or printed material with me?

PANCREATIC CANCER STAGING SYSTEM

The American Joint Committee on Cancer (AJCC) utilizes the TNM staging system to determine a patient's cancer stage. This system uses codes to describe the size of the primary tumor (T), the involvement of regional lymph nodes (N), and the presence of distant metastases (M). The TNM system provides a "stage grouping" based on these factors.

T – Primary Tumor	
The "T-stage" refers to the extent of the tumor: How large is the tumor and has it grown outside the pancreas into nearby blood vessels?	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma in situ This includes high-grade pancreatic intraepithelial neoplasia (PanIN-3), intraductal papillary mucinous neoplasm with high-grade dysplasia, intraductal tubulopapillary neoplasm with high-grade dysplasia, and mucinous cystic neoplasm with high-grade dysplasia
T1	Tumor ≤2 cm in greatest dimension
T1a	Tumor ≤0.5 cm in greatest dimension
T1b	Tumor >0.5 cm and <1 cm in greatest dimension
T1c	Tumor 1–2 cm in greatest dimension
T2	Tumor >2 cm and ≤4 cm in greatest dimension
T3	Tumor >4 cm in greatest dimension
T4	Tumor involves the celiac axis, superior mesenteric artery, and/or common hepatic artery, regardless of size

N – Regional Lymph Nodes	
The "N-stage" refers to the spread to nearby lymph nodes: Has the cancer spread to nearby lymph nodes? If so, how many of the lymph nodes have cancer?	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in one to three regional lymph nodes
N2	Metastasis in four or more regional lymph nodes

M – Distant Metastasis	
The "M-stage" refers to the spread (metastasized) to distant sites: Has the cancer spread to distant lymph nodes or distant organs such as the liver, peritoneum (the lining of the abdominal cavity), lungs or bones?	
M0	No distant metastasis
M1	Distant metastasis

Higher numbers mean cancer is more advanced. The TNM categories are then combined to assign an overall stage, from stage 0 (carcinoma in situ) to stage IV (metastatic cancer).

Stage group	T	N	M
Stage 0	Tis	N0	M0
Stage IA	T1	N0	M0
Stage IB	T2	N0	M0
Stage IIA	T3	N0	M0
Stage IIB	T1-T2-T3	N1	M0
Stage III	T1-T2-T3	N2	M0
	T4	Any N	M0
Stage IV	Any T	Any N	M1