

## PANCREATIC CANCER

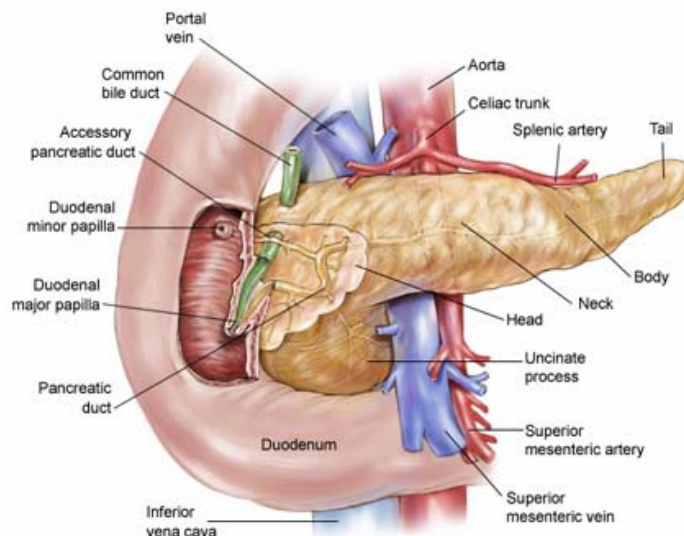
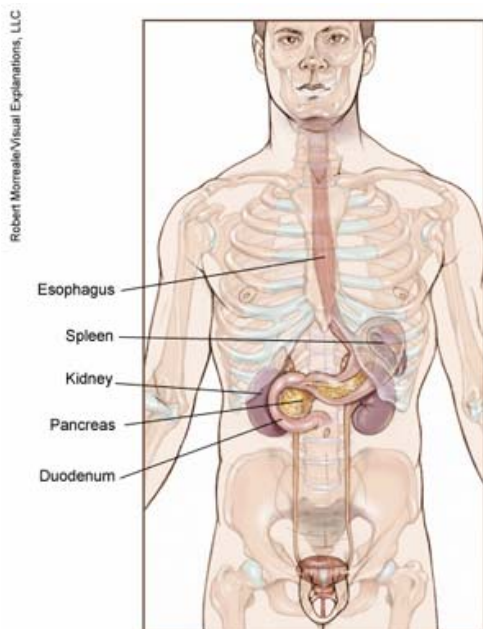
Pancreatic cancer is a disease in which cells become abnormal and multiply without control or order and form a malignant tumor in the tissues of the pancreas. The pancreas is a gland about 6 inches long that is shaped like a thin tadpole lying on its side. It lies behind the stomach and in front of the spine. The wider end of the pancreas is called the head, the middle section is called the body, and the narrow end is called the tail. The pancreas has “exocrine” cells that produce juices to help digest food; and, “endocrine” cells that produce hormones, such as insulin and glucagons. These help control blood sugar levels, and help the body use and store energy from food. About 95% of pancreatic cancers begin in exocrine cells. Cancers derived from the endocrine cells (pancreatic neuroendocrine tumors) have very different behavior and are not covered by this summary.

**RISK FACTORS** for developing pancreatic cancer include:

- \*Smoking
- \*Age: most cases occur in people over age 60
- \*Race: Black people have pancreatic cancer more often than Asians, Hispanics or whites
- \*Obesity or being overweight
- \*Long-standing or unexplained diabetes
- \*Chronic pancreatitis
- \*Uncommon hereditary conditions such as:
  - hereditary pancreatitis
  - multiple endocrine neoplasia type I syndrome
  - hereditary nonpolyposis colon cancer (HNPCC, Lynch syndrome)
  - von Hippel-Lindau syndrome
  - ataxia-telangiectasia
  - familial atypical multiple mole melanoma syndrome (FAMMM)
  - breast cancer BRCA2 families
- \*Family history: Risk increases three times if mother, father, brother or sister affected

**SYMPTOMS TO REPORT** include:

- \*Jaundice (yellowing of the skin and whites of the eyes)
- \*Pain in the upper or middle abdomen and back
- \*Unexplained weight loss
- \*Loss of appetite
- \*Fatigue



## DIAGNOSING AND STAGING

Pancreatic cancer is difficult to find and diagnose early because there are not any signs or symptoms in the early stages. Symptoms that may be present are similar to symptoms of other diseases. Also, the pancreas is hidden behind the stomach, small intestine, liver, gallbladder, spleen and bile ducts.

The following tests and procedures may be used to diagnose pancreatic cancer and determine the stage of the disease. Staging is the process of finding out if the cancer has spread to other parts of the body. It helps to determine the correct treatment.

**Physical exam** of entire body, including health habits and past illnesses and treatments

**X-rays** with a high energy beam that goes through body onto film to make pictures of areas inside the body

**Fine needle aspiration biopsy** is the removal of tissue samples to look for signs of cancer

**Endoscopic Ultrasound (EUS)** is an examination of areas inside the body with a thin, lighted tube inserted through the mouth and into the stomach. It bounces high-energy sound waves off of internal tissues or organs to make a video image of the inside of the body.

**Computerized Tomography (CT)** scans of the chest, abdomen and pelvis produce images of the size and location of tumors and metastases, or places where tumors have spread.

**Magnetic Resonance Imaging (MRI)** uses radio wave pulses to make images of spatial variations in the absorption and emission of energy between healthy tissue and tumors.

**Positron emission tomography (PET) scan** uses radioactive sugar molecules injected intravenously. Cancer cells absorb sugar more quickly than normal cells, so they "light up" on the scan.

**Laparoscopy** is a surgical procedure that only requires small incisions and uses a thin, lighted tube to examine organs inside of the abdomen to check for signs of disease. Organs and tissue samples for biopsy can also be removed during this procedure.

**Endoscopic retrograde cholangiopancreatography (ERCP)** is an x-ray of the bile ducts, the tubes that carry bile from the liver to the gallbladder and from the gallbladder to the small intestine. A thin, lighted tube (endoscope) is passed through the mouth, esophagus and stomach into the first part of the small intestine. A smaller tube, and dye to show up on x-ray, is then inserted through the endoscope into the pancreatic ducts to see if the tumor has caused the ducts to be blocked. Another small tube (stent) can be inserted and left in place to unblock the ducts during this procedure.

**Percutaneous transhepatic cholangiography (PTC)** is an x-ray of the liver and bile ducts that is performed only if ERCP can not be done. Dye to show up on x-ray is injected through a thin needle that is inserted through the skin below the ribs and into the liver. A thin, flexible tube called a stent is sometimes left in the liver to drain bile into the small intestine or a collection bag outside of the body.

## STAGES

**Stage 0:** Cancer is found only in the lining of the pancreas

**Stage I:** Cancer is only in the pancreas

**IA:** tumor is 2 centimeters or smaller; **IB:** tumor is larger than 2 centimeters

**Stage II:** Cancer has spread to nearby organs or tissues and possibly lymph nodes

**IIA:** Cancer has spread to nearby organs and tissues but not lymph nodes

**IIB:** Cancer has spread to nearby lymph nodes but not organs or tissues

**Stage III:** Cancer has spread to major blood vessels near the pancreas and may have spread to nearby lymph nodes

**Stage IV:** Cancer has spread to distant organs such as the liver, lung or peritoneal cavity. It may have also spread to organs near the pancreas or to lymph nodes.

**Recurrent:** Cancer that has come back after it has been treated.

## TREATMENT OPTIONS

Certain factors affect the chance of recovery and the choices for treatment. These include whether or not the tumor can be removed by surgery, the stage of the cancer, and the patient's general health. Pancreatic cancer can be controlled only if it is found before it has spread, when it can be removed by surgery. Long term benefit of surgery is only seen in patients who can have the tumor removed before it has spread to lymph nodes or other organs. Surgery can only be performed in relatively healthy patients with small tumors that do not invade the blood vessels. This is an aggressive cancer. Chemotherapy and radiation therapy are limited in their effectiveness. If it has spread, palliative treatment can improve the patient's quality of life by controlling the symptoms and complications of the disease.

**Surgery** to remove the cancer may involve one of these procedures:

**Whipple procedure** removes the head of the pancreas, the gallbladder, part of the stomach, part of the small intestine, and the bile duct. Enough of the pancreas is left to produce digestive juices and insulin.

**Total pancreatectomy** removes the whole pancreas, part of the stomach, part of the small intestine, the common bile duct, the gallbladder, the spleen, and nearby lymph nodes.

**Distal pancreatectomy** removes the body and tail of the pancreas and usually the spleen.

**Radiation therapy** uses high-energy x-rays to kill cancer cells. External radiation therapy uses a machine outside of the body to send radiation toward the cancer. Internal radiation therapy (brachytherapy) uses a radioactive substance sealed in needles, seeds, wires or catheters that are placed directly into or near the cancer.

**Chemotherapy** uses drugs taken by mouth, injections through a vein or muscle, or placed directly into the spinal column or in an organ to stop the growth of cancer cells. The way that chemotherapy is given depends on the type and stage of cancer being treated. Chemotherapy can be one or a combination of drugs.

If the cancer has spread and can not be removed, the following types of palliative surgery may be done to relieve symptoms:

**Surgical biliary bypass** cuts the gallbladder or bile duct and connects it to the small intestine to create a new pathway around any blockage of bile building up in the gallbladder.

**Endoscopic stent placement** is a procedure to insert a stent (a thin tube) to drain bile that has built up from the tumor blocking the bile duct.

**Gastric bypass** is a procedure to sew the stomach directly to the small intestine if the tumor is blocking the flow of food from the stomach. This permits the patient to continue eating normally.

Other types of treatment are being tested in clinical trials. These include the following:

**Biologic therapy** is a treatment that uses the patient's immune system to fight cancer. Substances made by the body or in a laboratory are used to boost, direct, or restore the body's natural defenses against cancer.

**Pain treatment** involves injecting medicine into the area around affected nerves in the abdomen or cutting the nerves to block the feelings of pain. Radiation therapy with or without chemotherapy can also help relieve pain by shrinking the tumor.

**Enzyme replacement** helps to prevent malnutrition. Removal of the pancreas may interfere with the production of digestive enzymes. Patients may have problems digesting food and absorbing nutrients. Medicines to replace the enzymes may be prescribed.

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and People Living with Cancer, March 2007

