

Pancreatic Cancer

Pancreatic cancer mainly occurs in people over 60. If it is diagnosed at an early stage, then an operation to remove the cancer followed by chemotherapy with or without radiation therapy gives the best chance of a cure.

What does the pancreas do ?

The pancreas is in the upper abdomen and lies behind the stomach and intestines. The pancreas has two functions : digestion and sugar control. The pancreas makes a fluid that contains enzymes (chemicals) that are needed to digest food. The pancreatic duct drains the fluid containing enzymes into the duodenum to help in digesting food. The role of the pancreas that most people are aware of is control of the blood sugar. Groups of special cells called 'Islets of Langerhans' are scattered throughout the pancreas. These cells make the hormones insulin and glucagon. The hormones are passed directly into the bloodstream to control the blood sugar level.

What is cancer?

Cancer is a disease of the cells in the body. The body is made up of millions of tiny cells. There are many different types of cell in the body, and there are many different types of cancer which arise from different types of cell. What all types of cancer have in common is that the cancer cells are abnormal and multiply 'out of control'.

A cancerous or malignant tumor is a 'lump' or 'growth' of tissue made up of cancer cells which continue to multiply. As they grow, malignant tumors can invade into nearby tissues and organs.

Malignant tumors may also spread to other parts of the body. This happens if some cells break off from the first (primary) tumor and are carried in the bloodstream or lymph channels to other parts of the body. These small groups of cells may then multiply to form 'secondary' tumors (metastasis) in one or more parts of the body. These secondary tumours may then grow and invade nearby tissues, and spread again.

Some cancers are more serious than others, some are more easily treated than others (particularly if diagnosed at an early stage), some have a better outlook (prognosis) than others.

In each case it is important to know what type of cancer has developed, where it has developed, how large it has become, and whether it has spread. This will enable you to get information on treatment options.

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What is pancreatic cancer?

There are several types of pancreatic cancer, but most are 'ductal adenocarcinomas'.

Ductal adenocarcinoma of the pancreas

This type of cancer develops from a cell which becomes cancerous in the pancreatic duct. This multiplies and a tumor then develops in and around the duct. As the tumour enlarges:

- It can block the bile duct or the main pancreatic duct. This stops the drainage of bile and/or pancreatic fluid into the duodenum.
- It invades deeper into the pancreas. In time it may pass through the wall of the pancreas and invade nearby organs such as the duodenum, stomach or liver.
- Some cells may break off into the lymph channels or bloodstream. The cancer may then spread to nearby lymph nodes or spread to other areas of the body (metastases).

Other types of pancreatic cancer

There are some rare types of cancer which arise from other types of cells within the pancreas. For example, cells in the pancreas that make insulin or glucagon can become cancerous ('insulinomas' and 'glucagonomas'). These behave differently to ductal adenocarcinoma. For example, they may produce too much insulin or glucagon which can cause various symptoms. Another type of cancer seen is a neuroendocrine tumor which may be in association with other diseases.

What causes pancreatic cancer (adenocarcinoma of the pancreas)?

A cancerous tumor starts from one abnormal cell. The exact reason why a cell becomes cancerous is unclear.

Many people develop cancer of the pancreas for no apparent reason. However, certain risk factors increase the chance that pancreatic cancer may develop. These include:

- Age : most cases are in people over 60.
- Smoking.
- Diet : a diet high in fat and meat seems to increase the risk.
- Obesity
- Chronic pancreatitis : persistent inflammation of the pancreas.
- Diabetes. However, note that the vast majority of people with diabetes do **not** develop pancreatic cancer.
- Chemicals. Heavy exposure at work to certain pesticides, dyes and chemicals used in metal refining may increase the risk.

Genetic and hereditary factors

Most cases of pancreatic cancer do **not** run in families. However, some families have a higher incidence of pancreatic cancer than average. It is thought that about 1 in 10 pancreatic cancer are due to inheriting an abnormal gene. See your doctor if you are concerned that pancreatic cancer is common in your family.

What are the symptoms of pancreatic cancer?

Symptoms of a blocked bile duct

In most cases the tumor first develops in the head of the pancreas. A small tumor often causes no symptoms at first. As the tumor grows it tends to block the bile duct. This stops the flow of bile into the duodenum which leads to:

- Jaundice (yellow skin)
- Dark urine
- Pale stool
- Generalised itching

Pain is often not a feature at first. Therefore a 'painless jaundice' that becomes worse is often the first sign of pancreatic cancer. Nausea and vomiting are also fairly common symptoms.

Other symptoms

As the cancer grows in the pancreas, further symptoms that may develop include:

- Pain in the upper abdomen. Pain can also pass through to the back.
- Generally feeling not well and loss of weight.
- Rarely, diabetes develops if nearly all the pancreas is damaged by the tumor.
- Sometimes a tumor can trigger inflammation of the pancreas - 'acute pancreatitis'. This can cause severe abdominal pain.
- If the cancer spreads to other parts of the body, various other symptoms may develop.

How is pancreatic cancer diagnosed and assessed?

Initial assessment

Some of the initial tests might include an ultrasound scan of the abdomen and various blood tests. These initial tests can usually give a good idea if there is a pancreatic tumor.

Assessing the extent and spread

If you are confirmed to have pancreatic cancer, or it is strongly suspected from the initial tests, then further tests may be done to assess if it has spread. For example:

- A CT scan (computerized tomography) is a commonly used test to assess pancreatic cancer. It is a specialised X-ray test that can give quite clear pictures of the inside of your body. An MRI scan is done if a CT scan cannot be done.
- An endoscopic ultrasound (EUS). An endoscope (gastroscope) is a thin, flexible, telescope. It is passed through the mouth, into the esophagus and stomach and on into the duodenum. The endoscope has with an ultrasound scanner at the tip which can obtain pictures of structures behind the gut such as the pancreas.
- A chest X-ray.
- A laparoscopy. This is a procedure that may be done to look inside your abdomen. A laparoscope is a thin telescope with a light source. It is used to light up and magnify the structures inside the abdomen. A laparoscope is passed into the abdomen through a small incision in the skin.

Biopsy

A biopsy is when a small sample of tissue is removed from a part of the body. The sample is then examined under the microscope to look for abnormal cells. If a biopsy is needed then one way to get a sample from the pancreas is to take the biopsy sample when you have an

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endoscopic ultrasound. In a few cases, a biopsy is done at the same time as having a scan. It can take up to two weeks for the result of a biopsy.

What are the treatment options pancreatic cancer?

Treatment options that may be considered include surgery, chemotherapy and radiotherapy. The treatment advised for each case depends on various factors such as the stage of the cancer (how large the cancer is and whether it has spread), and the general health.

Surgery

If the cancer is at an early stage, then there is a chance that surgery can be curative. (An early stage means a small tumour which is confined to within the pancreas and has not spread to the lymph nodes or other areas of the body).

- If the tumor is in the head of the pancreas then an operation to remove the head of the pancreas may be an option. This is an operation as the surrounding structures such as the duodenum, stomach, bile duct need to be removed and reconstructed once the head of the pancreas is removed. This is called a pancreaticoduodenectomy (“Whipple operation”)
- If the tumor is in the body or tail of the pancreas then removal of this part of the pancreas is an option. This is called a distal pancreatectomy.
- If the tumor is at a later stage, then surgery may be done to ease symptoms. For example, it may be possible to ease jaundice caused by a blocked bile duct. A 'bypass' procedure may be used, or a stent may be inserted into the bile duct.

Chemotherapy

Chemotherapy is a treatment of cancer by using anti-cancer drugs which kill cancer cells or stops them from multiplying. When chemotherapy is used in addition to surgery it is known as adjuvant chemotherapy. This aims to kill any cancer cells which may have spread away from the primary tumour.

Radiation therapy

Radiation therapy is a treatment which uses high energy beams of radiation which are focused on cancerous tissue. This kills cancer cells, or stops cancer cells from multiplying. Radiation therapy may be given after surgery or for tumors not removed, if localized.

What is the prognosis (outlook)?

If a pancreatic cancer is diagnosed and treated at an early stage then there is a chance of a cure with surgery. As a rule, the earlier the tumor is diagnosed, the better the outlook. Some tumors which develop in the head of the pancreas are diagnosed very early as they block the bile duct and cause jaundice fairly early on. This obvious symptom is then investigated and

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surgery to remove a small tumour may be curative.

However, many pancreatic cancers are advanced before they cause symptoms and are diagnosed. If a cure is not possible, treatment may be given to slow down the progression of the cancer.

The treatment of cancer is a developing area of medicine. New treatments continue to be developed and the outlook is always improving. Your doctor who knows your case can give more accurate information about your particular outlook.

Further help and information

Lustgarten Foundation - Pancreatic Cancer Research www.lustgarten.org/

The mission of this organization is to advance the science related to the diagnosis, treatment, cure and prevention of pancreatic cancer.

Pancreatic Cancer Action Network www.pancan.org/

The national organization creating hope in a comprehensive way through research, patient support, community outreach and advocacy for a cure.

American Cancer Society® | Cancer.org www.cancer.org/

Get the Latest on **Pancreatic Cancer** Explore Research & Find Treatment.

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www.bupa.co.uk/individuals/health-information

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