



# pancreatic cancer

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## what is the pancreas?

The pancreas is a large gland that lies behind the stomach, at the back of the tummy area (abdomen) – at about the same height as the bottom of the breastbone. It is about 15cm (6 inches) long and shaped a bit like a tadpole.

## what does the pancreas do?

- It makes enzymes, which help to break down (digest) food. The cells that produce enzymes are called exocrine cells.
- It makes hormones, including insulin, which control the level of sugar in the blood (blood sugar level). The cells that produce hormones are called endocrine cells.

Both of these functions can be affected if the pancreas isn't working properly – for example, because of pancreatic cancer.

## what is pancreatic cancer?

Pancreatic cancer occurs when cells in your pancreas develop mutations in their DNA. These mutations cause cells to grow uncontrollably and to continue living after normal cells would die. These accumulating cells can form a tumor. Untreated pancreatic cancer spreads to nearby organs and blood vessels.

Pancreatic cancers are divided into two main groups.

- Exocrine cancers which begins in the cells that line the ducts of the pancreas.
- Endocrine cancers (also called neuroendocrine tumours or NETs) which form in the hormone-producing cells or the neuroendocrine cells of the pancreas.

The most common type of pancreatic cancer is pancreatic ductal adenocarcinoma.

## what are the signs and symptoms?

Pancreatic cancer often doesn't cause any signs or symptoms in the early stages. This can make it hard to diagnose early. But as the cancer grows, it may start to cause symptoms. These will depend on the type of pancreatic cancer and where it is in the pancreas.

It's important to remember that symptoms described here can be caused by more common things, such as indigestion or heartburn. They can also be caused by conditions such as pancreatitis (inflammation of the pancreas), gallstones, irritable bowel syndrome, or hepatitis (inflammation of the liver). These symptoms don't necessarily mean that someone has pancreatic cancer. But if you have any symptoms that you're worried about it's important that you seek a consultation.



The most common type of pancreatic cancer is called pancreatic ductal adenocarcinoma (PDAC). The information here is about the symptoms of PDAC. There are also rare types of pancreatic cancer called pancreatic neuroendocrine tumours (PNETs) of pancreatic cancer. They may cause some of the symptoms here, as well as some different symptoms.

The symptoms of Pancreatic Ductal Adenocarcinoma (PDAC) can be quite vague and may come and go to begin with. Common symptoms include abdominal (tummy) and back pain, unexplained weight loss, and indigestion.

### Other symptoms include:

- Loss of appetite
- Changes to bowel habits – including steatorrhoea (pale, smelly stools (poo) that may float), diarrhoea (loose watery stools) or constipation (problems opening your bowels)
- Jaundice (yellow skin and eyes, and itching)
- Nausea and vomiting (feeling and being sick)
- Difficulty swallowing
- Recently diagnosed diabetes

## risk factors for pancreatic cancer

The causes of cancer are complex. It may be caused by a variety of things, including your genetic make-up and lifestyle choices, such as smoking. Although scientists now know more about the causes of cancer, we still need more research.

A lot of the evidence about the risk factors for pancreatic cancer is unclear. Some studies may find that something increases the risk, while others may show that it has no effect. And there may be other risk factors that researchers haven't yet found.

The information below is about the things research suggests may increase someone's risk of pancreatic cancer. It's important to remember that having some of the risk factors doesn't mean you will definitely get pancreatic cancer. Remember too that people sometimes get pancreatic cancer, even if they don't have any of the risk factors.

There is good evidence that age, smoking, being overweight, a family history of pancreatic cancer, pancreatitis, and diabetes may increase your risk of pancreatic cancer.

Some evidence has suggested that the following may also increase your risk:

- Alcohol
- Red and processed meat
- History of cancer
- Blood group
- Hepatitis
- Stomach or gall bladder surgery
- Helicobacter pylori infection

## what tests are used to diagnose pancreatic cancer?

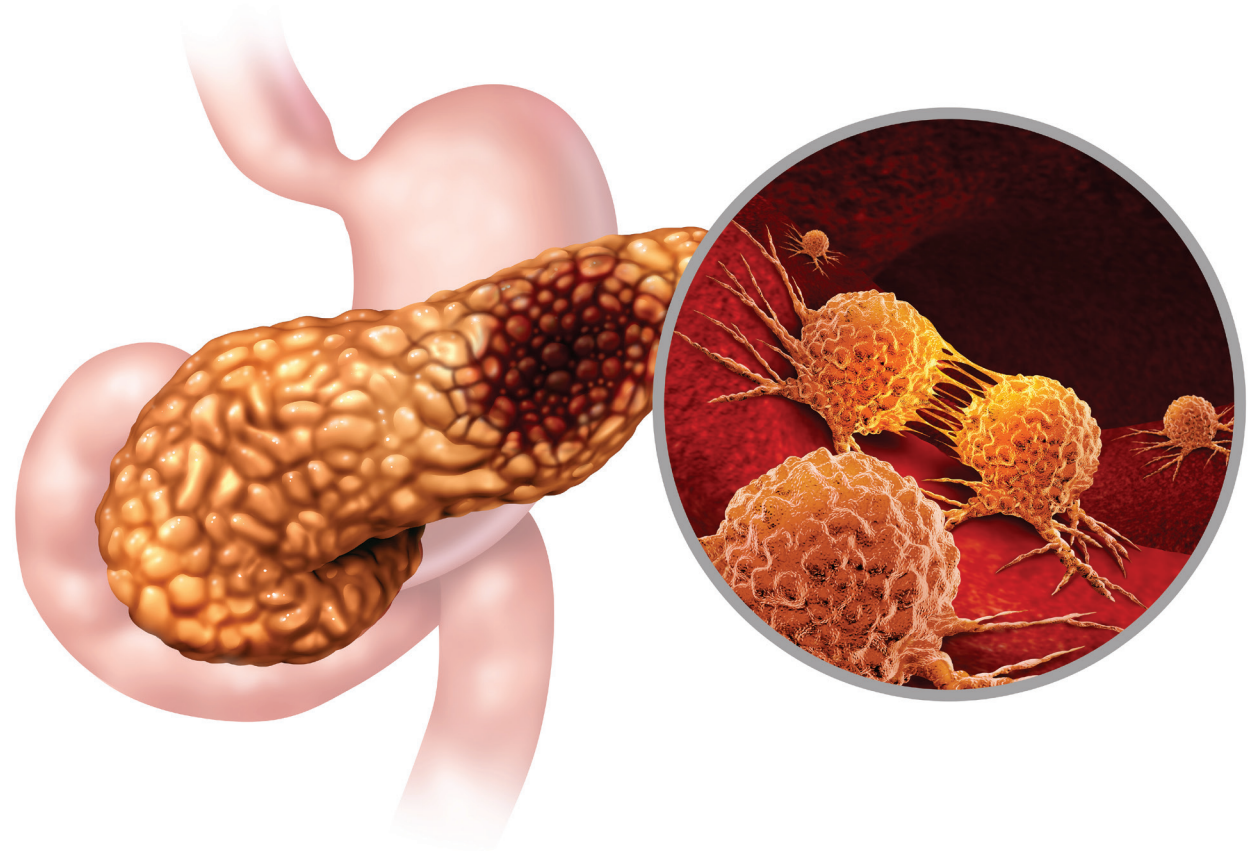
You may have different tests at different times. For example, you may have tests which diagnose pancreatic cancer, but then need more to find out exactly what type of pancreatic cancer you have and what stage it is. Some of these tests include:

- Blood tests: These are used to check for tumour markers. These are chemical substances produced by cancers that show up in the bloodstream. CA9-19 is a marker that may help diagnose pancreatic cancer. But not all pancreatic cancers produce tumour markers, and other conditions that aren't cancer can also produce them. This means blood tests are used together with other tests to make a diagnosis.
- Ultrasound scan of the tummy area (abdomen)
- CT (computerised tomography) scan
- MRI (magnetic resonance imaging) scan - EUS (endoscopic ultrasound scan)
- ERCP (endoscopic retrograde cholangio-pancreatography)
- Biopsy: A biopsy involves taking small tissue samples to be examined under a microscope.
- MRCP (magnetic resonance cholangio-pancreatography)
- PET-CT scan
- Laparoscopy: This is a small operation that can help to check that the cancer can be removed by surgery, before you have the actual surgery. It may also be used to confirm a diagnosis of pancreatic cancer, or to work out how far the cancer has spread.



## treatments for pancreatic cancer

To work out the best pancreatic cancer treatment for you, your doctors will look at the type of pancreatic cancer you have, the stage of the cancer, where it is in the pancreas, and whether it's spread to any of the surrounding organs and blood vessels. They will also look at other things such as your age, and your general health and fitness. Your treatment options will depend on whether it is possible to remove the pancreatic cancer with surgery. But even if surgery to remove the cancer isn't possible, you may be able to have chemotherapy to slow down the growth of the cancer. And there are treatments available to help with symptoms.



### Treatment options for pancreatic cancer may include the following:

- Surgery may be used to completely remove the cancer, for example a Whipple's operation (discussed further below).
- Other types of surgery or other procedures, such as having a stent inserted or bypass surgery, may be used help to relieve symptoms.
- Chemotherapy may be used after, and occasionally before, surgery to remove the cancer. If surgery to remove the cancer isn't possible, chemotherapy is used to slow down the growth of the cancer and relieve symptoms.
- Radiotherapy may be used on its own or together with chemotherapy to control the cancer and relieve symptoms. It may also be used after, and occasionally before, surgery to remove the cancer.

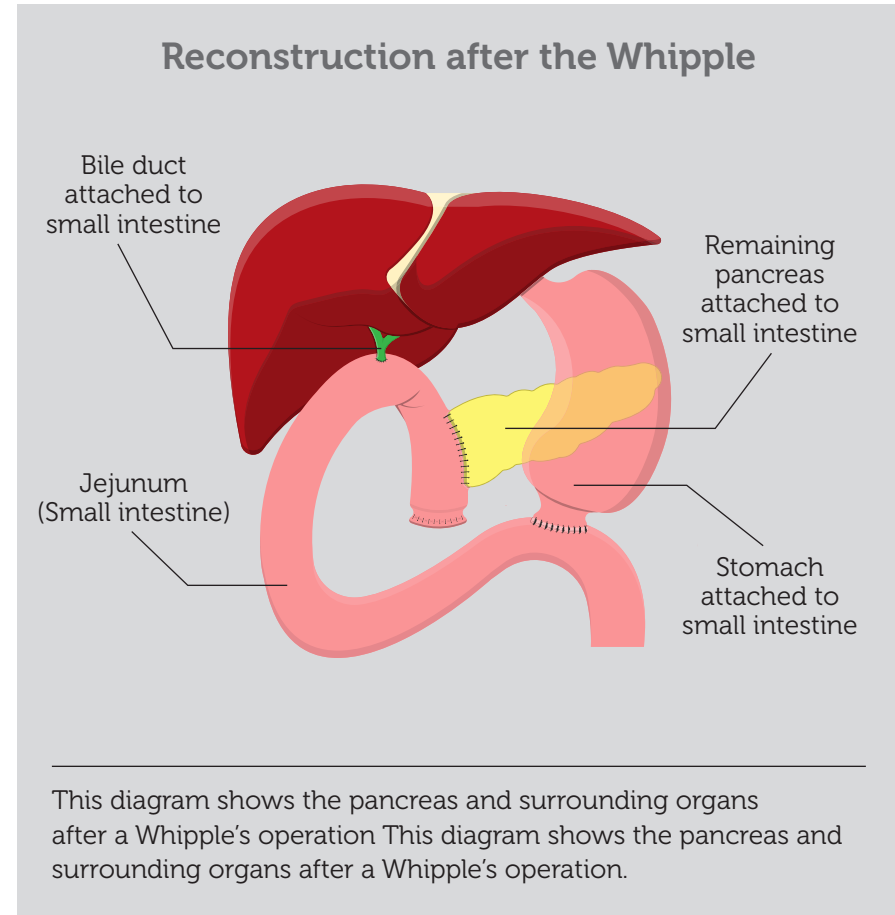
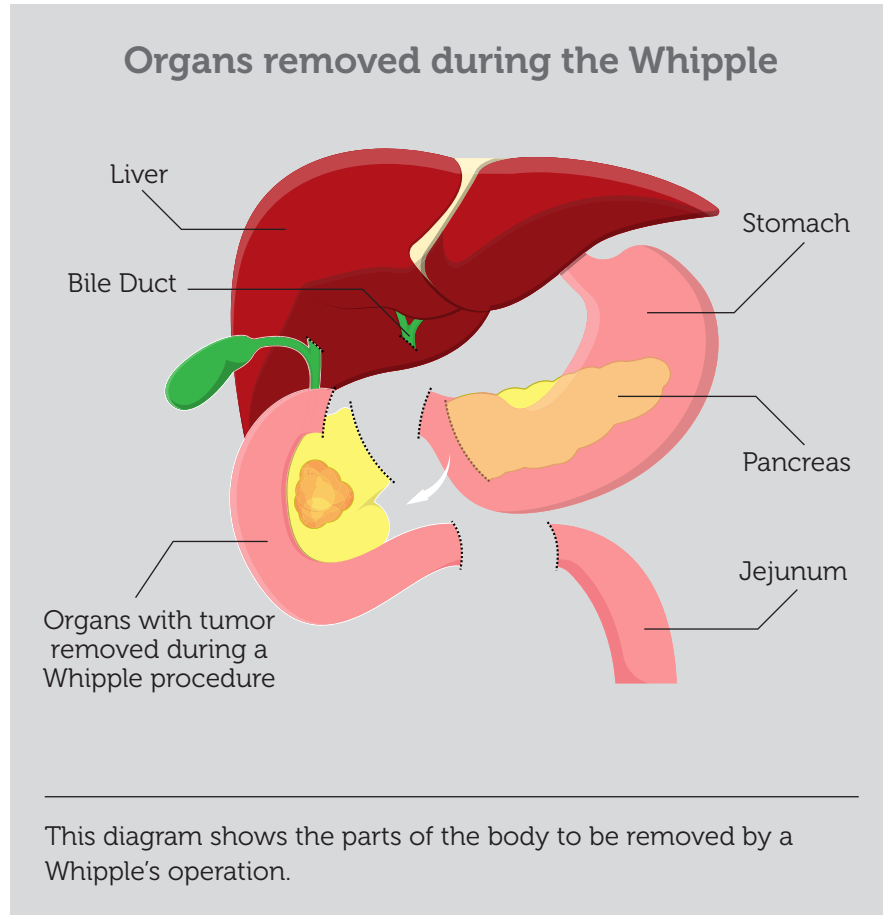
### Whipple's operation (Pancreaticoduodenectomy or PD)

The Whipple's operation is one of the most common types of surgery for pancreatic cancer. It's usually used for tumours in the head of the pancreas that haven't spread beyond the pancreas.

The surgeon will remove the head of the pancreas. They also remove:

- The lower end of the stomach
- The duodenum (first part of the small intestines)
- The gall bladder (which stores a fluid called bile which helps digestion)
- Part of the bile duct (which carries bile from the liver to the duodenum)
- Surrounding lymph nodes (part of the immune system).

They then attach the remaining part of the stomach and bile duct to the small intestines. The pancreas is attached to the small intestines or to the stomach.



As part of your pancreas is removed during a Whipple's operation, your digestion will be affected, and you will probably need to take pancreatic enzyme supplements. There is also a risk of getting diabetes.



## check-ups after pancreatic cancer surgery

Your surgeon will aim to take out all the pancreatic cancer, along with some of the normal tissue around it.

The aim is to make sure that all of the cancer has been removed. After surgery, a pathologist (doctor who looks at tissue samples in a laboratory) will look at the tissue to check whether there are any cancer cells in the surrounding area.

This will help your medical team decide whether you need more treatment, such as chemotherapy.

You will have an appointment about two weeks after you leave hospital to get these results.

Your check-up is also an opportunity to talk to your doctor about any side effects or problems you might be having, and how to manage these.

Your long-term check-ups (also called follow-up) after your operation will vary depending on where you are treated, and whether further treatment is needed.

You will usually have an appointment every three to six months after your surgery for the first two years.

After two years you may have an appointment every year or telephone check-ups for up to five years.



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