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Pancreatic Cancer - Diagnosis [1]

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ON THIS PAGE: You will find a list of the common tests, procedures, and scans that doctors can use to find out what's wrong and identify the cause of the problem. To see other pages, use the menu on the side of your screen.

Doctors use many tests to diagnose cancer and find out if it has spread to another part of the body, called metastasis. Some tests may also determine which treatments may be the most effective. For most types of cancer, a biopsy is the only way to make a definitive diagnosis of cancer. If a biopsy is not possible, the doctor may suggest other tests that will help make a diagnosis. Imaging tests may be used to find out whether the cancer has spread.

This list describes options for diagnosing this type of cancer, and not all tests listed will be used for every person. Your doctor may consider these factors when choosing a diagnostic test:

- Age and medical condition
- Type of cancer suspected
- Signs and symptoms
- Previous test results

If a doctor suspects that a person has pancreatic cancer, he or she will first ask about the

person's medical history, family history, and examine the person to look for [signs of the disease](#) [3]. An appropriate and timely diagnosis is very important. If possible, tests should be done at a center that has experience with the disease. The tests listed below may be used to diagnose pancreatic cancer.

General tests

- **Physical examination.** The doctor will examine the skin and eyes to see if they are yellow, which is a sign of jaundice. Jaundice can be from a tumor in the head of the pancreas blocking the normal flow of a substance called bile that is produced in the liver. However, many patients with pancreatic cancer do not have jaundice when the cancer is diagnosed. The doctor will also feel the abdomen for changes caused by the cancer, although the pancreas itself, located in the back of the upper abdomen, can rarely be felt. An abnormal buildup of fluid in the abdomen, called [ascites](#) [4], may be another sign of cancer.
- **Blood tests.** The doctor may take samples of blood to check for abnormal levels of bilirubin and other substances. Bilirubin is a chemical that may reach high levels in patients with pancreatic cancer due to blockage of the common bile duct by a tumor. There are many other non-cancerous causes of an elevated bilirubin level, such as hepatitis, gallstones, or mononucleosis.

Carbohydrate antigen 19-9 (CA19-9) is a tumor marker. A tumor marker is a substance produced by a tumor that may be found at higher levels if cancer is present and can be measured in the blood. CA19-9 is often higher in people with pancreatic cancer. High levels of CA 19-9 should not be used as the only test to make the diagnosis of pancreatic cancer, because high levels of CA 19-9 also can be a sign of other conditions. This can be a sign of other types of cancer, such as colorectal, liver, and esophageal cancers. It can also occur in noncancerous conditions, such as pancreatitis, cirrhosis of the liver, and a non-cancerous blockage of the common bile duct.

Imaging tests

Imaging tests help doctors find out where the cancer is located and whether it has spread from the pancreas to other parts of the body. Pancreatic cancer often does not develop as a single large tumor, which means it can sometimes be difficult to see on imaging tests. However, newer computed tomography scanners (see below) produce better, clearer images that can make it easier to find. A radiologist is a doctor who specializes in interpreting imaging tests.

- **Computed tomography (CT or CAT) scan.** A [CT scan](#) [5] creates a multi-dimensional picture of the inside of the body with a machine similar to an x-ray machine. A computer

then combines these images into a detailed, cross-sectional view that shows any abnormalities or tumors. A CT scan can also be used to measure the tumor's size. Sometimes, a special dye called a contrast medium is given before the scan to provide better detail on the image. This dye can be injected into a patient's vein or given as a pill to swallow. Many cancer centers use a special CT scan method called a pancreatic protocol CT scan. This method focuses specifically on taking images of the pancreas at specific times after the intravenous (IV) injection of contrast medium to find out exactly where the tumor is in relation to nearby organs and vessels. The results of this test can help decide if the tumor could be removed with surgery.

- **Positron emission tomography (PET) scan.** A [PET scan](#) [6] is usually done in combination with a CT scan, with the images placed over each. A PET scan is a way to create multi-colored pictures of organs and tissues inside the body. A small amount of a radioactive sugar substance called a tracer is injected into the patient's body. This sugar substance is taken up by cells that use the most energy. Because cancer tends to use energy actively, it absorbs more of the radioactive substance. A scanner then detects this substance to produce images of the inside of the body. The combination provides a more complete picture of the area being evaluated. PET scans are done regularly at some but not all cancer centers for the diagnosis and staging of pancreatic cancer. However, they are not yet considered a standard test to diagnose pancreatic cancer. A PET scan alone should never be used instead of a high-quality CT scan.
- **Ultrasound.** An [ultrasound](#) [7] uses sound waves to create a picture of the internal organs. There are 2 types of ultrasound devices: transabdominal and endoscopic.
 - A transabdominal ultrasound device is placed on the outside of the abdomen and is slowly moved around by the doctor to produce an image of the pancreas and surrounding structures.
 - The endoscopic ultrasound (EUS) device is a thin, lighted tube that is passed through the patient's mouth and stomach and down into the small intestine to take a picture of the pancreas. This procedure is very specialized and requires a gastroenterologist who has special training in this area. A gastroenterologist is a doctor who specializes in the gastrointestinal tract, including stomach, intestines, and similar organs. EUS is generally done under sedation, so the patient sleeps through the procedure. A biopsy (see below) may also be done at the same time as this procedure.
- **Endoscopic retrograde cholangiopancreatography (ERCP).** This procedure is performed by a gastroenterologist. The doctor will put a thin, lighted tube called an [endoscope](#) [8] through the mouth and stomach into the small intestine. Then, a smaller

tube called a catheter is passed through the endoscope and into the bile ducts and pancreatic ducts. Dye is injected into the ducts, and the doctor then takes x-rays that can show whether a duct is compressed or narrowed. Often, a plastic or metal stent can be placed across the obstructed bile duct during ERCP to help relieve any jaundice. Samples of the tissue can be taken during this procedure and can sometimes help confirm the diagnosis of cancer. The patient is lightly sedated during this procedure. ERCP is generally used to place bile duct stents and not commonly used for diagnosis.

- **Percutaneous transhepatic cholangiography (PTC).** In this x-ray procedure, a thin needle is inserted through the skin and into the liver. A dye is injected through the needle, so the bile ducts show up on x-rays. By looking at the x-rays, the doctor can tell whether there is a blockage of the bile ducts.

Biopsy and tissue tests

- **Biopsy.** A [biopsy](#) [9] is the removal of a small amount of tissue for examination under a microscope. Other tests can suggest that cancer is present, but for most cancers only a biopsy can make a definite diagnosis. A pathologist then analyzes the sample(s). A pathologist is a doctor who specializes in interpreting laboratory tests and evaluating cells, tissues, and organs to diagnose disease. For pancreatic cancer, the pathologist may often have specific experience in looking at pancreatic cancer biopsy samples. There are a few different ways to collect a tissue sample:
 - One technique is called fine needle aspiration (FNA). An FNA uses a thin needle that is inserted into the pancreas to suction out cells. This is typically done by EUS (see above) or through the skin, called percutaneously, guided by a CT scan.
 - Another method uses a core or Tru-Cut needle biopsy to collect a larger piece of tissue. A larger piece of tissue may be helpful for molecular or genetic testing of the tumor. However, a core biopsy has higher risks than an FNA. It should be performed by a well-trained specialist.

If the cancer has spread to other organs, a biopsy may also be needed from one of these other sites, such as the liver. Again, this can be through the skin, as explained above, or less commonly, by surgery. This type of surgery can be done through a larger incision in the abdomen, called a laparotomy. Or, it can be done using much smaller incisions that provide openings for a tiny camera and surgical instruments, called a laparoscopic approach.

Rarely, a biopsy may not show that cancer cells are present because the area sampled

may be made up of areas of inflammation and/or fibrosis (scar-like tissue), in addition to cancer cells. In general, before a patient starts treatment, every effort is made to confirm that cancer is present, even if this means that multiple biopsies are needed. One exception is for patients with a mass located in one area of the pancreas that can be removed with surgery even if a biopsy is not performed or the biopsy does not show cancer cells.

- **Molecular testing of the tumor.** Your doctor may recommend running laboratory tests on a tumor sample or a blood sample to identify specific genes, proteins, and other factors unique to the tumor. These are called biomarkers. Examples of biomarkers for pancreatic cancer include *RAS*, *SPARC*, *hENT1*, and *DPC4*. Some patients, when having surgery or certain types of biopsies (see above), choose to have some of the tissue sent to independent laboratories that look at some or all of these biomarkers. Results of these tests may help to guide treatment decisions, although more research is needed for this to become a standard way of making treatment decisions. However, it is an area of increasing interest and scientific focus. It is important to note that many insurance companies do not provide coverage for these types of tests yet. Talk with your doctor for more information. Also, patients who have surgery may choose to donate parts of the tumor that are not needed for diagnostic tests so the samples can be used to further pancreatic cancer research.

After diagnostic tests are done, your doctor will review all of the results with you, including the exact type of cancer you have, how much the cancer has grown and spread (called the stage), and the options for treatment.

The [next section in this guide is Stages](#) [10], and it explains the system doctors use to describe the extent of the disease. Or, use the menu on the side of your screen to choose another section to continue reading this guide.

Links

[1] <http://www.cancer.net/cancer-types/pancreatic-cancer/diagnosis>

[2] <http://www.cancer.net/about-us>

[3] <http://www.cancer.net/node/19499>

[4] <http://www.cancer.net/node/25049>

[5] <http://www.cancer.net/node/24486>

[6] <http://www.cancer.net/node/24565>

[7] <http://www.cancer.net/node/24714>

[8] <http://www.cancer.net/node/24511>

[9] <http://www.cancer.net/node/24406>

[10] <http://www.cancer.net/node/19501>