

## **Fact Sheet - Diagnosing Pancreatic Cancer**

Pancreatic cancer is very difficult to detect early, as tumors on the pancreas cannot be felt during a routine physical exam because the pancreas is so deep inside the body. However, advances in pancreatic imaging over the past 20 years have increased doctors' ability to evaluate pancreatic cancer. Today's imaging power enables physicians to establish the diagnosis, identify candidates for resection, plan surgical approaches, and identify inoperable patients.

Here are descriptions of several different tests that can be used to diagnose pancreatic cancer:

### ***CT scan (Computed Tomography, or CAT scan)***

A CT scan involves the use of an x-ray machine that is linked to a computer. The patient lies on a bed that is passed through a doughnut-shaped machine. As the machine moves along the patient's body, it simultaneously takes multiple x-rays. The computer then pieces the x-rays together to produce detailed pictures. A CT scan can also be done with contrast dye. CT scans are noninvasive and not painful. No sedation is required.

### ***PET scan (Positron Emission Tomography)***

In a PET scan, a form of sugar that contains a radioactive atom is injected into the blood. Cancer cells absorb this sugar, and can be seen with a special camera. This test can help physicians see if cancer has spread. A new system for using PET and CT scans together is being studied.

### ***MRI (Magnetic Resonance Imaging)***

Unlike X-ray or CT, MRI sees through bone to image soft tissue, by using a strong magnet, radio waves and a computer. The patient lies on a bed that is passed into the MRI's magnetic field. Radio waves are sent through the patient's body, causing its hydrogen atoms to emit signals. The scanner uses these signals to produce cross-sectional views of the body in "slices," which are then sent to the computer, which combines the slices to create detailed images from any angle. MRIs take longer than CT scans (up to an hour) and the patient lies in a narrow tube, which can lead to claustrophobia. There is now newer open MRI equipment, however, which can be of help with this.

### ***Ultrasonography/ultrasound***

Ultrasounds use high-frequency sound waves to produce a picture called a sonogram. A probe placed on the abdomen emits sound waves, and the echoes that the sound waves produce as they bounce off internal organs creates a sonogram. Healthy tissues and tumors produce different echoes. Ultrasounds are non-invasive and do not cause pain.

### ***EUS (Endoscopic Ultrasound)***

This is a test that combines ultrasound (see above) with an endoscope. The ultrasound machine is on the end of a long tube (an endoscope) which is inserted down the throat, through the stomach and into the duodenum, where it is used to direct sound waves to the pancreas. This test is especially useful for detecting small tumors of the pancreas. EUS is a minimally invasive procedure, during which the patient is sedated and given numbing medication for the throat.

### ***LUS (Laparoscopic Ultrasound)***

For this minimally invasive test, a small incision is cut into the abdomen, and a laparoscope (an instrument that is like a mini telescope and is connected to a video monitor) is used to view the pancreas. General anesthesia is typically used during this procedure. This particular test is very effective in determining if the cancer has spread to the liver or peritoneum.

### ***ERCP (Endoscopic retrograde cholangiopancreatography)***

ERCP is a method for taking x-rays of the common bile duct and the pancreatic ducts. The doctor passes an endoscope (long tube) down the throat, through the stomach, and into the small intestine. The doctor then injects dye into the ducts and takes x-rays. The patient is sedated during this invasive procedure, and given medication to numb the throat.

### ***MRCP (Magnetic Resonance Cholangiopancreatography)***

A MRCP is a kind of MRI that is used as an alternative to an ERCP. It is not invasive and no dye is used. The only preparation required of the patient is fasting. MRCP is typically combined with MRI testing.

### ***Biopsies***

Pictures of the pancreas and nearby organs provide important clues as to whether a person has cancer. However, taking a biopsy is the only way for a doctor to be certain that pancreatic cancer is present. In a biopsy, the doctor removes a small tissue sample. A pathologist examines the tissue under a microscope to check for cancer cells. Biopsies can be taken by several different methods.

### ***Blood Tests***

Although a variety of blood tests including tests known as “Tumor Markers” have been examined for use in the diagnosis or follow-up of pancreatic cancer, none has proven satisfactory. The most widely studied of these blood tests is CA 19-9, the level of which, when elevated, may help to differentiate a benign disorder from a carcinoma. The best use for these tests may be to check a particular patient regularly to watch for any changes. Your doctor is the best one to advise you as to whether these tests are appropriate.



**Supported by an educational grant from Eli Lilly and Company**



*This fact sheet is provided courtesy of the National Pancreas Foundation. To learn more about our organization, please visit our website at [www.pancreasfoundation.org](http://www.pancreasfoundation.org).*