



CEU Update

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Pancreatic Cancer

The Pancreatic Cancer Action Network, Inc. (PanCAN), established in 1999, is the first national patient advocacy organization for the pancreatic cancer community. PanCAN works to focus national attention on the need to find a cure for pancreatic cancer. They provide public and professional education embracing the urgent need for more research, effective treatments, prevention programs and early detection methods. PanCAN also funds research grants for pancreatic cancer, as well as providing patient services. Volunteers across the country help to accomplish their goals.

The Pancreas

The pancreas is a gland located deep in the abdomen between the stomach and the spine (backbone). The liver, intestine, and other organs surround the pancreas.

The pancreas is about 6 inches long and is shaped like a flat pear. The widest part of the pancreas is the head, the middle section is the body, and the thinnest part is the tail.

The pancreas makes insulin and other hormones. These hormones enter the bloodstream and travel throughout the body. They help the body use or store the energy that comes from food. For example, insulin helps control the amount of sugar in the blood.

The pancreas also makes pancreatic juices. These juices contain enzymes that help digest food. The pancreas releases the juices into a system of ducts leading to the common bile duct. The common bile duct empties into the duodenum, the first section of the small intestine.

Understanding Cancer

Cancer is a group of many related diseases. All cancers begin in cells, the body's basic unit of life. Cells make up tissues, and tissues make up the organs of the body. Normally, cells grow and divide to form new cells as the body needs them. When cells grow old and die, new cells take their place.

Sometimes this orderly process breaks down. New cells form when the body does not need them, or old cells do not die when they should. These extra cells can form a mass of tissue called a growth or tumor. Tumors can be benign or malignant:

- Benign tumors are not cancer. Usually, doctors can remove them. In most cases, benign tumors do not come back after they are removed. Cells from benign tumors do not spread to tissues around them or to other parts of the body. Most important, benign tumors are rarely a threat to life.

- Malignant tumors are cancer. They are generally more serious and may be life threatening. Cancer cells can invade and damage nearby tissues and organs. Also, cancer cells can break away from a malignant tumor and enter the bloodstream or lymphatic system. That is how cancer cells spread from the original cancer (primary tumor) to form new tumors in other organs. The spread of cancer is called metastasis.

Most pancreatic cancers begin in the ducts that carry pancreatic juices. Cancer of the pancreas may be called pancreatic cancer or carcinoma of the pancreas. A rare type of pancreatic cancer begins in the cells that make insulin and other hormones. Cancer that begins in these cells is called islet cell cancer.

When cancer of the pancreas spreads (metastasizes) outside the pancreas, cancer cells are often found in nearby lymph nodes. If the cancer has reached these nodes, it means that cancer cells may have spread to other lymph nodes or other tissues, such as the liver or lungs. Sometimes cancer of the pancreas spreads to the peritoneum, the tissue that lines the abdomen.

When cancer spreads from its original place to another part of the body, the new tumor has the same kind of abnormal cells and the same name as the primary tumor. For example, if cancer of the pancreas spreads to the liver, the cancer cells in the liver are pancreatic cancer cells. The disease is metastatic pancreatic cancer, not liver cancer. It is treated as pancreatic cancer, not liver cancer.

Pancreatic Cancer: Who's at Risk?

No one knows the exact causes of pancreatic cancer. Doctors can seldom explain why one person gets pancreatic cancer and another does not. However, it is clear that this disease is not contagious. No one can "catch" cancer from another person.

Research has shown that people with certain risk factors are more likely than others to develop pancreatic cancer. A risk factor is anything that increases a person's chance of developing a disease.

Studies have found the following risk factors:

- Age -- The likelihood of developing pancreatic cancer increases with age. Most pancreatic cancers occur in people over the age of 60.
- Smoking -- Cigarette smokers are two or three times more likely than nonsmokers to develop pancreatic cancer.
- Diabetes -- Pancreatic cancer occurs more often in people who have diabetes than in people who do not.
- Being male -- More men than women are diagnosed with pancreatic cancer.
- Being African American -- African Americans are more likely than Asians, Hispanics, or whites to get pancreatic cancer.
- Family history -- The risk for developing pancreatic cancer triples if a person's mother, father, sister, or brother had the disease. Also, a family history of colon or ovarian cancer increases the risk of pancreatic cancer.
- Chronic pancreatitis -- Chronic pancreatitis is a painful condition of the pancreas. Some evidence suggests that chronic pancreatitis may increase the risk of pancreatic cancer.

Other studies suggest that exposure to certain chemicals in the work place or a diet high in fat may increase the chance of getting pancreatic cancer.

Most people with known risk factors do not get pancreatic cancer. People who think they may be at risk for pancreatic cancer should discuss this concern with their doctor. The doctor may suggest ways to reduce the risk and can plan an appropriate schedule for checkups.

Symptoms

Pancreatic cancer is sometimes called a "silent disease" because early pancreatic cancer often does not cause symptoms. But, as the cancer grows, symptoms may include:

- Pain in the upper abdomen or upper back
- Yellow skin and eyes, and dark urine from jaundice
- Weakness
- Loss of appetite
- Nausea and vomiting
- Weight loss

These symptoms are not sure signs of pancreatic cancer. An infection or other problem could also cause these symptoms. Only a doctor can diagnose the cause of a person's symptoms. Anyone with these symptoms should see a doctor so that the doctor can treat any problem as early as possible.

Diagnosis

If a patient has symptoms that suggest pancreatic cancer, the doctor asks about the patient's medical history. The doctor may perform a number of procedures, including one or more of the following:

- Physical exam -- The doctor examines the skin and eyes for signs of jaundice. The doctor then feels the abdomen to check for changes in the area near the pancreas, liver, and gallbladder. The doctor also checks for ascites, an abnormal buildup of fluid in the abdomen.
- Lab tests -- The doctor may take blood, urine, and stool samples to check for bilirubin and other substances. Bilirubin is a substance that passes from the liver to the gallbladder to the intestine. If the common bile duct is blocked by a tumor, the bilirubin cannot pass through normally. Blockage may cause the level of bilirubin in the blood, stool, or urine to become very high. High bilirubin levels can result from cancer or from noncancerous conditions.
- CT scan (Computed tomography) -- An x-ray machine linked to a computer takes a series of detailed pictures. The x-ray machine is shaped like a donut with a large hole. The patient lies on a bed that passes through the hole. As the bed moves slowly through the hole, the machine takes many x-rays. The computer puts the x-rays together to create pictures of the pancreas and other organs and blood vessels in the abdomen.
- Ultrasonography -- The ultrasound device uses sound waves that cannot be heard by humans. The sound waves produce a pattern of echoes as they bounce off internal organs. The echoes create a picture of the pancreas and other organs inside the abdomen. The echoes from tumors are different from echoes made by healthy tissues.

The ultrasound procedure may use an external or internal device, or both types:

- Transabdominal ultrasound: To make images of the pancreas, the doctor places the ultrasound device on the abdomen and slowly moves it around.
- EUS (Endoscopic ultrasound): The doctor passes a thin, lighted tube (endoscope) through the patient's mouth and stomach, down into the first part of the small intestine. At the tip of the endoscope is an ultrasound device. The doctor slowly withdraws the endoscope from the intestine toward the stomach to make images of the pancreas and surrounding organs and tissues.
- ERCP (endoscopic retrograde cholangiopancreatography) -- The doctor passes an endoscope through the patient's mouth and stomach, down into the first part of the small intestine. The doctor slips a smaller tube (catheter) through the endoscope into the bile ducts and pancreatic ducts. After injecting dye through the catheter into the ducts, the doctor takes x-ray pictures. The x-rays can show whether the ducts are narrowed or blocked by a tumor or other condition.
- PTC (percutaneous transhepatic cholangiography) -- A dye is injected through a thin needle inserted through the skin into the liver. Unless there is a blockage, the dye should move freely through the bile ducts. The dye makes the bile ducts show up on x-ray pictures. From the pictures, the doctor can tell whether there is a blockage from a tumor or other condition.
- Biopsy -- In some cases, the doctor may remove tissue. A pathologist then uses a microscope to look for cancer cells in the tissue. The doctor may obtain tissue in several ways. One way is by inserting a needle into the pancreas to remove cells. This is called fine-needle aspiration. The doctor uses x-ray or ultrasound to guide the needle. Sometimes the doctor obtains a sample of tissue during EUS or ERCP. Another way is to open the abdomen during an operation.

Staging

When pancreatic cancer is diagnosed, the doctor needs to know the stage, or extent, of the disease to plan the best treatment. Staging is a careful attempt to find out the size of the tumor in the pancreas, whether the cancer has spread, and if so, to what parts of the body.

The doctor may determine the stage of pancreatic cancer at the time of diagnosis, or the patient may need to have more tests. Such tests may include blood tests, a CT scan, ultrasonography, laparoscopy, or angiography. The test results will help the doctor decide which treatment is appropriate.

Treatment

Many people with pancreatic cancer want to take an active part in making decisions about their medical care. They want to learn all they can about their disease and their treatment choices. However, the shock and stress that people may feel after a diagnosis of cancer can make it hard for them to think of everything they want to ask the doctor. Often it helps to make a list of questions before an appointment. To help remember what the doctor says, patients may take notes or ask whether they may use a tape recorder. Some patients also want to have a family member or friend with them when they talk to the doctor-to take part in the discussion, to take notes, or just to listen.

Cancer of the pancreas is very hard to control with current treatments. For that reason, many doctors encourage patients with this disease to consider taking part in a clinical trial. Clinical trials are an important option for people with all stages of pancreatic cancer. At this time, pancreatic cancer can be cured only when it is found at an early stage, before it has spread. However, other treatments may be able to control the disease and help patients live longer and feel better. When a cure or control of the disease is not possible, some patients and their doctors choose palliative therapy. Palliative therapy aims to improve quality of life by controlling pain and other problems caused by this disease.

The doctor may refer patients to an oncologist, a doctor who specializes in treating cancer, or patients may ask for a referral. Specialists who treat pancreatic cancer include surgeons, medical oncologists, and radiation oncologists. Treatment generally begins within a few weeks after the diagnosis. There will be time for patients to talk with the doctor about treatment choices, get a second opinion, and learn more about the disease.

Getting a Second Opinion

Before starting treatment, a patient may want a second opinion about the diagnosis and the treatment plan. Some insurance companies require a second opinion; others may cover a second opinion if the patient requests it. Gathering medical records and arranging to see another doctor may take a little time. In most cases, a brief delay to get another opinion will not make therapy less helpful.

There are a number of ways to find a doctor for a second opinion:

- The doctor may refer patients to one or more specialists. At cancer centers, several specialists often work together as a team.
- The Cancer Information Service (1-800-4-CANCER) can tell callers about treatment facilities, including cancer centers and other programs supported by the National Cancer Institute, and can send printed information about finding a doctor.
- A local medical society, a nearby hospital, or a medical school can usually provide the name of specialists.
- The American Board of Medical Specialties (ABMS) has a list of doctors who have met certain education and training requirements and have passed specialty examinations. The Official ABMS Directory of Board Certified Medical Specialists lists doctors' names along with their specialty and their educational background. The directory is available in most public libraries. Also, ABMS offers this information on the Internet at <http://www.abms.org> (click on "Who's Certified").

Preparing for Treatment

The doctor can describe treatment choices and discuss the results expected with each treatment option. The doctor and patient can work together to develop a treatment plan that fits the patient's needs.

Treatment depends on where in the pancreas the tumor started and whether the disease has spread. When planning treatment, the doctor also considers other factors, including the patient's age and general health.

People do not need to ask all of their questions or understand all of the answers at one time. They will have other chances to ask the doctor to explain things that are not clear and to ask for more information.

Methods of Treatment

People with pancreatic cancer may have several treatment options. Depending on the type and stage, pancreatic cancer may be treated with surgery, radiation therapy, or chemotherapy. Some patients have a combination of therapies.

Surgery may be used alone or in combination with radiation therapy and chemotherapy.

The surgeon may remove all or part of the pancreas. The extent of surgery depends on the location and size of the tumor, the stage of the disease, and the patient's general health.

- Whipple procedure: If the tumor is in the head (the widest part) of the pancreas, the surgeon removes the head of the pancreas and part of the small intestine, bile duct, and stomach. The surgeon may also remove other nearby tissues.
- Distal pancreatectomy: The surgeon removes the body and tail of the pancreas if the tumor is in either of these parts. The surgeon also removes the spleen.
- Total pancreatectomy: The surgeon removes the entire pancreas, part of the small intestine, a portion of the stomach, the common bile duct, the gallbladder, the spleen, and nearby lymph nodes.

Sometimes the cancer cannot be completely removed. But if the tumor is blocking the common bile duct or duodenum, the surgeon can create a bypass. A bypass allows fluids to flow through the digestive tract. It can help relieve jaundice and pain resulting from a blockage.

The doctor sometimes can relieve blockage without doing bypass surgery. The doctor uses an endoscope to place a stent in the blocked area. A stent is a tiny plastic or metal mesh tube that helps keep the duct or duodenum open.

After surgery, some patients are fed liquids intravenously (by IV) and through feeding tubes placed into the abdomen. Patients slowly return to eating solid foods by mouth. A few weeks after surgery, the feeding tubes are removed.

These are some questions a person may want to ask the doctor before having surgery:

- What kind of operation will I have?
- How will I feel after the operation?
- How will you treat my pain?
- What other treatment will I need?
- How long will I be in the hospital?
- Will I need a feeding tube after surgery? Will I need a special diet?
- What are the long-term effects?
- When can I get back to my normal activities?
- How often will I need checkups?

Radiation therapy (also called radiotherapy) uses high-energy rays to kill cancer cells. A large machine directs radiation at the abdomen. Radiation therapy may be given alone, or with surgery, chemotherapy, or both.

Radiation therapy is local therapy. It affects cancer cells only in the treated area. For radiation therapy, patients go to the hospital or clinic, often 5 days a week for several weeks.

Doctors may use radiation to destroy cancer cells that remain in the area after surgery. They also use radiation to relieve pain and other problems caused by the cancer.

These are some questions a person may want to ask the doctor before having radiation therapy:

- Why do I need this treatment?
- When will the treatments begin? When will they end?
- How will I feel during therapy? Are there side effects?
- What can I do to take care of myself during therapy? Are there certain foods that I should eat or avoid?
- How will we know if the radiation is working?
- Will I be able to continue my normal activities during treatment?

Chemotherapy is the use of drugs to kill cancer cells. Doctors also give chemotherapy to help reduce pain and other problems caused by pancreatic cancer. It may be given alone, with radiation, or with surgery and radiation.

Chemotherapy is systemic therapy. The doctor usually gives the drugs by injection. Once in the bloodstream, the drugs travel throughout the body.

Usually chemotherapy is an outpatient treatment given at the hospital, clinic, doctor's office, or home. However, depending on which drugs are given and the patient's general health, the patient may need to stay in the hospital.

Patients may want to ask these questions about chemotherapy:

- Why do I need this treatment?
- What will it do?
- What drugs will I be taking? How will they be given? Will I need to stay in the hospital?
- Will the treatment cause side effects? What can I do about them?
- How long will I be on this treatment?

Side Effects of Treatment

Since cancer treatment may damage healthy cells and tissues, unwanted side effects are common. These side effects depend on many factors, including the type and extent of the treatment. Side effects may not be the same for each person, and they may even change from one treatment session to the next. The health care team will explain possible side effects and how they will help the patient manage them.

The NCI provides helpful booklets about cancer treatments and coping with side effects, such as [Radiation Therapy and You](#), [Chemotherapy and You](#), and [Eating Hints for Cancer Patients](#).

Surgery

Surgery for pancreatic cancer is a major operation. Patients need to stay in the hospital for several days afterward. Patients may feel weak or tired. Most need to rest at home for about a month. The length of time it takes to regain strength varies.

The side effects of surgery depend on the extent of the operation, the person's general health, and other factors. Most patients have pain for the first few days after surgery. Pain can be controlled with medicine, and patients should discuss pain relief with the doctor or nurse.

Removal of part or all of the pancreas may make it hard for a patient to digest foods. The health care team can suggest a diet plan and medicines to help relieve diarrhea, pain, cramping, or feelings of fullness. During the recovery from surgery, the doctor will carefully monitor the patient's diet and weight. At first, a patient may have only liquids and may receive extra nourishment intravenously or by feeding tube into the intestine. Solid foods are added to the diet gradually.

Patients may not have enough pancreatic enzymes or hormones after surgery. Those who do not have enough insulin may develop diabetes. The doctor can give the patient insulin, other hormones, and enzymes.

Radiation Therapy

Radiation therapy may cause patients to become very tired as treatment continues. Resting is important, but doctors usually advise patients to try to stay as active as they can. In addition, when patients receive radiation therapy, the skin in the treated area may sometimes become red, dry, and tender.

Radiation therapy to the abdomen may cause nausea, vomiting, diarrhea, or other problems with digestion. The health care team can offer medicine or suggest diet changes to control these problems. For most patients, the side effects of radiation therapy go away when treatment is over.

Chemotherapy

The side effects of chemotherapy depend mainly on the drugs and the doses the patient receives as well as how the drugs are given. In addition, as with other types of treatment, side effects vary from patient to patient.

Systemic chemotherapy affects rapidly dividing cells throughout the body, including blood cells. Blood cells fight infection, help the blood to clot, and carry oxygen to all parts of the body. When anticancer drugs damage healthy blood cells, patients are more likely to get infections, may bruise or bleed easily, and may have less energy. Cells in hair roots and cells that line the digestive tract also divide rapidly. As a result, patients may lose their hair and may have other side effects such as poor appetite, nausea and vomiting, diarrhea, or mouth sores. Usually, these side effects go away gradually during the recovery periods between treatments. The health care team can suggest ways to relieve side effects.

Pain Control

Pain is a common problem for people with pancreatic cancer. The tumor can cause pain by pressing against nerves and other organs. The patient's doctor or a specialist in pain control can relieve or reduce pain in several ways:

- Pain medicine -- Medicines often can relieve pain. (These medicines may make people drowsy and constipated, but resting and taking laxatives can help.)
- Radiation -- High-energy rays can help relieve pain by shrinking the tumor.
- Nerve block -- The doctor may inject alcohol into the area around certain nerves in the abdomen to block the feeling of pain.
- Surgery -- The surgeon may cut certain nerves to block pain.

The doctor may suggest other ways to relieve or reduce pain. For example, massage, acupuncture, or acupressure may be used along with other approaches to help relieve pain. Also, the patient may learn relaxation techniques such as listening to slow music or breathing slowly and comfortably.

More information about pain control can be found in the NCI publications called Pain Control: A Guide for People with Cancer and Their Families, Get Relief from Cancer Pain, and Understanding Cancer Pain. The Cancer Information Service can send these booklets.

Nutrition

People with pancreatic cancer may not feel like eating, especially if they are uncomfortable or tired. Also, the side effects of treatment such as poor appetite, nausea, or vomiting can make eating difficult. Foods may taste different. Nevertheless, patients should try to get enough calories and protein to control weight loss, maintain strength, and promote healing. Also, eating well often helps people with cancer feel better and have more energy.

Careful planning and checkups are important. Cancer of the pancreas and its treatment may make it hard for patients to digest food and maintain the proper blood sugar level. The doctor will check the patient for weight loss, weakness, and lack of energy. Patients may need to take medicines to replace the enzymes and hormones made by the pancreas. The doctor will also watch the patient closely and adjust the doses of these medicines as needed.

The doctor, dietitian, or other health care provider can advise patients about ways to maintain a healthy diet. Patients and their families may want to read the National Cancer Institute booklet Eating Hints for Cancer Patients, which contains many useful suggestions and recipes.

Follow-Up Care

Follow-up care after treatment for pancreatic cancer is an important part of the overall treatment plan. Patients should not hesitate to discuss follow-up with their doctor. Regular checkups ensure that any changes in health are noticed. Any problem that develops can be found and treated. Checkups may include a physical exam, laboratory tests, and imaging procedures.

Support for People with Pancreatic Cancer

Living with a serious disease such as pancreatic cancer is not easy. Some people find they need help coping with the emotional and practical aspects of their disease. Support groups can help. In these groups, patients or their family members get together to share what they have learned about coping with their disease and the effects of treatment. Patients may want to talk with a member of their health care team about finding a support group.

People living with pancreatic cancer may worry about the future. They may worry about caring for themselves or their families, keeping their jobs, or continuing daily activities. Concerns about treatments and managing side effects, hospital stays, and medical bills are also common. Doctors, nurses, and other members of the health care team can answer questions about treatment, diet, working, or other matters. Meeting with a social worker, counselor, or member of the clergy can be helpful to those who want to talk about their feelings or discuss their concerns. Often, a social worker can suggest resources for financial aid, transportation, home care, emotional support, or other services.

Materials on coping with cancer are available from the Cancer Information Service (1-800-4-CANCER). The Cancer Information Service can also provide information to help patients and their families locate programs, services, and publications.

The Promise of Cancer Research

Laboratory scientists are studying the pancreas to learn more about it. They are studying the possible causes of pancreatic cancer and are researching new ways to detect tumors. They also are looking for new therapies that may kill cancer cells.

Doctors in clinics and hospitals are conducting many types of clinical trials. These are research studies in which people take part voluntarily. In these trials, researchers are studying ways to treat pancreatic cancer. Research already has led to advances in treatment methods, and researchers continue to search for more effective approaches to treat this disease.

Patients who join clinical trials have the first chance to benefit from new treatments that have shown promise in earlier research. They also make an important contribution to medical science by helping doctors learn more about the disease. Although clinical trials may pose some risks, researchers take very careful steps to protect their patients.

In trials with people who have pancreatic cancer, doctors are studying new drugs, new combinations of chemotherapy, and combinations of chemotherapy and radiation before and after surgery.

Biological therapy is also under investigation. Scientists are studying several cancer vaccines to help the immune system fight cancer. Other studies use monoclonal antibodies to slow or stop the growth of cancer.

CEU QUESTIONNAIRE

Complete the questions below to receive 10.5 continuing education credits. All questions must be answered completely to receive credit.

1. What is PanCan? _____

2. Where is the pancreas? _____

3. What is the function of the pancreas? _____

4. What does insulin control? _____

5. What do the enzymes from the pancreatic juices do? _____

6. What is the duodenum? _____

7. Where do all the cancers begin? _____

8. How does a tumor begin? _____

9. What are benign tumors? _____

10. What are malignant tumors? _____

11. Where do most pancreatic cancers begin? _____

12. Define metastasizes. _____

13. Define peritoneum. _____

14. Name two risk factors for pancreatic cancer. _____

15. Why is pancreatic cancer called a silent disease? _____

16. What is a CT scan? _____

17. What is ultrasonography? _____

18. What does the doctor do with ERCP? _____

19. What is a biopsy? _____

20. What is staging? _____

21. What is palliative therapy? _____

22. Name one way to find a second opinion. _____

23. What does treatment depend on? _____

24. What is the whipple procedure? _____

25. What is a pancreatic bypass? _____

26. What is a stent? _____

27. What question might a patient ask about surgery? _____

28. Describe radiation therapy. _____

29. What is chemotherapy? _____

30. What do surgical side effects depend on? _____

31. Why may a patient have trouble digesting food? _____

32. After surgery, why may some patients develop diabetes? _____

33. Why can a tumor cause pain? _____

34. What is a nerve block? _____

35. Name two other ways to relieve pain that a doctor may suggest. _____

36. What can happen to a patient's appetite? _____

37. How do support groups help? _____

38. How can a social worker help? _____

39. What are clinical trials? _____

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