TREATMENT UPDATE:

Pancreatic Cancer

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Treatment Update: Pancreatic Cancer

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All people depicted in the photographs in this booklet are models, used for illustrative purposes only.

Each year, more than 55,000 people in the United States—most over the age of 60—will be diagnosed with pancreatic cancer. In recent years, additional treatment options have become available to people living with pancreatic cancer, and more are on the horizon.

The pancreas is a gland located behind the stomach in the upper left abdomen. It's about six to ten inches long and is shaped like a flat pear. Cells in the pancreas make enzymes to help the body digest food. These cells also produce essential hormones, including insulin, that help control sugar levels in the blood.

More than 95 percent of pancreatic cancers (tumors) form in the gland's exocrine cells, usually in the ducts. Tumors that form in endocrine cells are called neuroendocrine (or islet-cell) tumors, and account for less than 5 percent of all pancreatic cancers. They affect the hormone-producing cells in the pancreas and tend to grow more slowly than exocrine tumors.

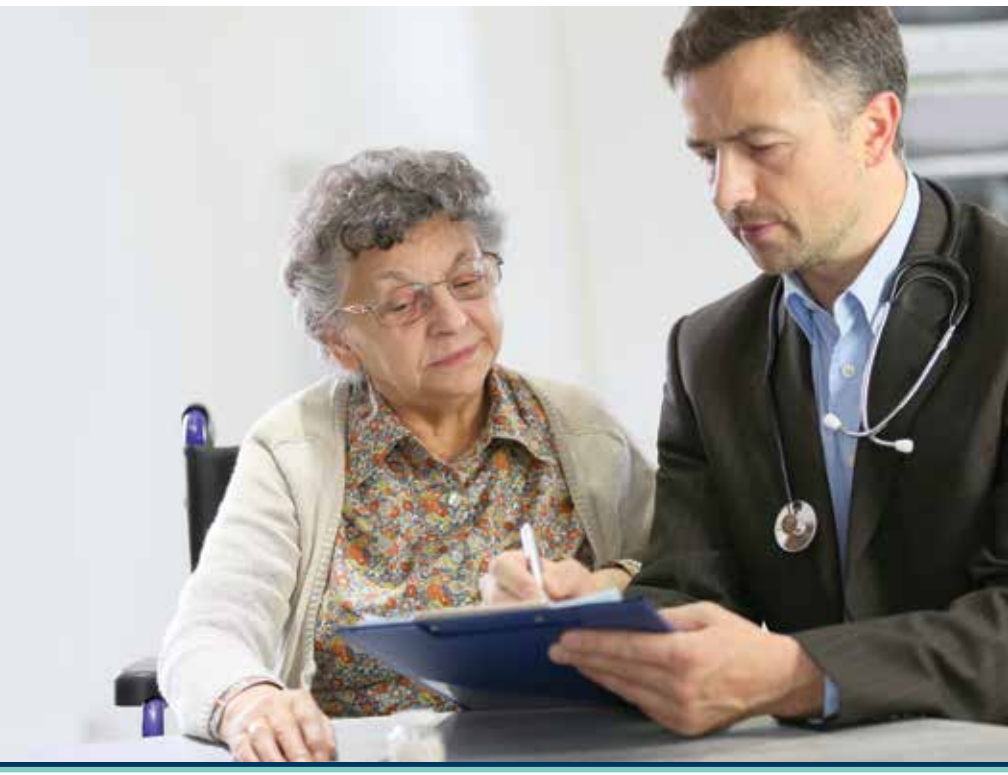
After your diagnosis, you and your health care team will discuss the best way to proceed with your treatment. Factors that will influence the choice of treatment include the type and size of the tumor, its location, how quickly it is growing and whether it has spread to other parts of the body (metastasized). Your overall health will also be taken into consideration.

Treatment Options

Potentially Curative Surgery

Surgery may be an option for people whose tumor is located in the "head" of the pancreas, or in the regions adjacent to the head such as the "body" or "tail" of the pancreas, as long as the cancer has not spread beyond those areas.

About 10 to 15 percent of people diagnosed with pancreatic cancer will be candidates for a Whipple procedure (a surgery for cancer in the head of the pancreas) in which parts of the pancreas, gall bladder, bile duct and small bowel are removed. A portion of the pancreas is left in place to produce digestive enzymes and make insulin.



Cancers in the body or tail of the pancreas are removed in an operation called a distal pancreatectomy, in which the bottom half of the pancreas is removed. In this surgery, the spleen is also typically removed. In rare instances, patients may require a total pancreatectomy (removal of the entire pancreas, part of the stomach and small intestine, the bile duct, gallbladder, spleen and nearby lymph nodes).

If surgery is chosen, patients should select a surgeon who has a high level of experience operating on pancreatic cancer, and who works with a dedicated hospital support team. Studies show that patients who undergo pancreatic surgery performed by an experienced surgeon with a strong clinical support team have the best outcomes.

Palliative Surgery

Palliative surgery is sometimes performed to relieve symptoms such as jaundice and blockage of the stomach or duodenum (the upper part of the small intestine). There are a few common types of palliative surgery:

- **Biliary bypass surgery** may be performed if the tumor is blocking the bile duct (a tube that carries bile from the gallbladder to the duodenum). The surgery reroutes the flow of bile around the tumor.
- **Duodenal bypass surgery** (gastrojejunostomy) may be performed if the tumor blocks the duodenum. This surgery allows food to pass from the stomach directly into the small bowel.
- **Bile duct or duodenal stent insertion** is a procedure performed by a gastroenterologist to open a blocked bile duct by inserting a small metal or plastic tube (stent).

Radiation Therapy

Radiation therapy can prevent pancreatic tumors from growing; it can also sometimes shrink the tumors. A form of therapy called external beam radiation is commonly used in treating pancreatic cancer. Standard external beam radiation uses a machine that directs a beam (or multiple beams) of radiation through the skin to the tumor.

Intensity-modulated radiation therapy (IMRT) is a form of external beam radiation that allows a higher dose of radiation to be directed to the tumor, while minimizing the amount of radiation received by healthy tissue near the pancreas. The use of IMRT may result in fewer side effects compared to standard external beam radiation. A newer form of radiation called stereotactic radiation can deliver higher doses of radiation in shorter time periods.

Chemotherapy

Chemotherapy is the use of drugs to kill cancer cells, usually by stopping the ability of the cells to grow and divide. It is often part of the treatment plan for exocrine tumors, the most common type of pancreatic cancer:

- **Neoadjuvant** treatment is when chemotherapy is given before surgery to try to shrink the tumor.
- **Adjuvant** treatment is the use of chemotherapy after surgery, to try to kill any residual cancer cells not destroyed by the surgery.
- **Chemoradiation** is when chemotherapy is given along with radiation. It can increase the effectiveness of the radiation, but can lead to increased side effects.

Chemotherapy may also be given if the pancreatic cancer is inoperable, or if surgery isn't an option for another reason.

Gemcitabine (Gemzar) has long been a standard option for patients with cancer that has spread beyond the pancreas. It is approved by the United States Food and Drug Administration (FDA) for the treatment of locally advanced or metastatic unresectable (inoperable) pancreatic cancer for patients previously treated with the chemotherapy drug fluorouracil (5-FU).

Gemcitabine can shrink the cancer, ease symptoms and help patients live longer and with a better quality of life. Studies have shown there is also a benefit to using gemcitabine as an adjuvant treatment and that, in this setting, overall survival is improved when gemcitabine is combined with the chemotherapy capecitabine.

FOLFIRINOX (a combination of 5-FU, leucovorin, irinotecan and oxaliplatin) is also often used in the treatment of metastatic pancreatic cancer. A recent phase III trial concluded that FOLFIRINOX is more effective than gemcitabine when given to physically fit individuals as a first-line (initial) adjuvant treatment.

In recent years, two new chemotherapy drugs have been approved by the FDA for patients with metastatic pancreatic cancer:

- **Albumin-bound paclitaxel** (Abraxane), to be used in combination with gemcitabine as a first-line treatment, was approved in 2013.
- **Irinotecan liposome injection** (Onivyde), to be used in combination with 5-FU and leucovorin in patients whose disease has grown while on gemcitabine, was approved in 2015.

The drugs most often used in chemoradiation are 5-FU, capecitabine and gemcitabine.

Targeted Therapy

Targeted therapies are designed to target the specific cell mechanisms that are important for the growth and survival of tumor cells.

Erlotinib (Tarceva) was approved by the FDA in 2005 for the treatment of locally advanced, inoperable or metastatic pancreatic cancer. Erlotinib targets a protein on cancer cells called EGFR, which normally helps the cancer cells grow. This drug is given in combination with the chemotherapy gemcitabine.

In 2011, the FDA approved the targeted therapy drugs sunitinib (Sutent) and everolimus (Afinitor) for the treatment of advanced pancreatic neuroendocrine (islet-cell) tumors.

New Approaches Being Studied

There are several promising new treatment approaches being studied for patients with locally advanced or metastatic pancreatic cancer:

- PEGPH20, an enzyme, is a drug that breaks down hyaluronic acid (HA) and lowers the pressure inside tumors, allowing the blood to more effectively deliver chemotherapy to cancer cells. Researchers are testing PEGPH20, in combination with gemcitabine and albumin-bound paclitaxel, in patients with previously untreated pancreatic cancer whose tumors express high levels of HA.
- PARP is a type of enzyme that helps repair DNA. PARP inhibitors are designed to prevent cancer cells from repairing their damaged DNA. This prevention can cause the cancer cells to die. Ongoing clinical trials are testing platinum agents and/or PARP inhibitors in the subset of patients with BRCA 1/2 and other gene mutations.

- Immunotherapy treatments are designed to enhance the immune system's ability to seek out and destroy cancer cells. There are clinical trials underway to study combinations of immunotherapies and combining immunotherapy with chemotherapy for the treatment of pancreatic cancer.

The Importance of Clinical Trials

Clinical trials are the standard by which we measure the safety and effectiveness of new treatments and the quality of life of patients as they receive those treatments. For this reason, doctors and researchers urge people with cancer to take part in clinical trials.

Your doctor can guide you in making a decision about whether a clinical trial is right for you. Here are a few things that you should know:

- Often, people who take part in clinical trials gain access to and benefit from new treatments.
- Before you participate in a clinical trial, you will be fully informed as to the risks and benefits of the trial, including any possible side effects.
- Many clinical trials are designed to test a new treatment against a standard treatment to find out whether the new treatment has any added benefit.
- Participation is voluntary and does not affect your access to treatment in other settings. You can stop taking part in a clinical trial at any time for any reason.

Exocrine Pancreatic Insufficiency (EPI)

A healthy pancreas secretes enzymes that help with digestion. When a person has pancreatic cancer, the cancer or its treatments (including surgery) can affect the ability of the pancreas to secrete these enzymes. This condition is called exocrine pancreatic insufficiency (EPI).

There are prescription pancreatic enzymes available to treat EPI. Talk to your health care team if you experience any of the following symptoms:

- Indigestion, bloating or cramping after meals
- Frequent or loose stools or diarrhea
- Floating or light-colored stools
- Greasy or fatty stools
- Foul-smelling gas or stools
- Unexplained weight loss

Treatment Side Effects

All cancer treatments can cause side effects. It's important that you report any side effects that you experience to your health care team so they can help you manage them. Report them right away—don't wait for your next appointment. Doing so will improve your quality of life and allow you to maintain your treatment plan. It's important to remember that not all patients experience all side effects, and patients may experience side effects not listed here.

Side Effects of Chemotherapy

The side effects of chemotherapy depend on the type and dose of drugs given and the length of time they are used, and can include:

- Fatigue
- Nausea or vomiting
- Hair loss
- Increased risk of infection (from having too few white blood cells)
- Easy bruising or bleeding (from having a low platelet count)
- Changes in memory or thinking
- Peripheral neuropathy (numbness or tingling in hands and feet)

Chemotherapy can cause changes in the way food and liquids taste, including causing an unpleasant metallic taste in the mouth. Many people find that switching to plastic utensils helps. It may also help to avoid eating or drinking anything that comes in a can, and to use enamel-coated pots and pans for food preparation.

Side Effects of Radiation Therapy

Changes to the skin are the most common side effects of radiation therapy. The changes can include dryness, swelling, peeling, redness and blistering. If a reaction occurs, contact your health care team so the appropriate treatment can be prescribed. It's especially important to contact your health care team if there is any open skin or painful areas, as this could indicate an infection. Infections can be treated with an oral antibiotic or topical antibiotic cream.

Side Effects of Targeted Therapy

Targeted therapy doesn't have the same effect on the body as do chemotherapy drugs, but they can still cause side effects. Side effects of targeted therapies can include diarrhea, liver problems (such as hepatitis and elevated liver enzymes), nerve damage, high blood pressure and problems with blood clotting and wound healing.

General Side Effects

Some side effects may occur across treatment approaches. This section provides tips and guidance on how to manage these side effects should they occur.

Managing Digestive Tract Symptoms

Nausea and vomiting

- Avoid food with strong odors, as well as overly sweet, greasy, fried or highly seasoned food.
- Eat meals cold or at room temperature, which often makes food more easily tolerated.

- Nibble on dry crackers or toast. These bland foods are easy on the stomach.
- Having something in your stomach when you take medication may help ease nausea.

Diarrhea

- Drink plenty of water. Ask your doctor about using drinks such as Gatorade which provide electrolytes as well as liquid. Electrolytes are body salts that must stay in balance for cells to work properly.
- Over-the-counter medicines such as loperamide (Imodium A-D and others) and prescription drugs are available for diarrhea but should be used only if necessary. If the diarrhea is bad enough that you need medicine, discuss it with your doctor or nurse.
- Choose fiber-dense foods such as whole grains, fruits and vegetables, all of which help form stools.
- Avoid food high in refined sugar and those sweetened with sugar alcohols such as sorbitol and mannitol.

Managing loss of appetite

- Weight loss is common in people being treated for pancreatic cancer. Eating small meals throughout the day is an easy way to take in more protein and calories, which will help maintain your weight. Try to include protein in every meal.
- To keep from feeling full early, avoid liquids with meals or take only small sips (unless you need liquids to help swallow). Drink most of your liquids between meals.
- Be as physically active as you can. Sometimes, taking a short walk an hour or so before meals can help you feel hungry.

- Keep high-calorie, high-protein snacks on hand such as hard-boiled eggs, peanut butter, cheese, ice cream, granola bars, liquid nutritional supplements, puddings, nuts, canned tuna or trail mix.
- If you are struggling to maintain your appetite, talk to your health care team about whether appetite-building medication could be right for you.

Managing Fatigue

Fatigue (extreme tiredness not helped by sleep) is one of the most common side effects of many cancer treatments. If you are taking a medication, your doctor may lower the dose of the drug, as long as it does not make the treatment less effective. If you are experiencing fatigue, talk to your doctor about whether taking a smaller dose is right for you.

There are a number of other tips for reducing fatigue:

- Take several short naps or breaks during the day.
- Take short walks or do some light exercise, if possible.
- Try easier or shorter versions of the activities you enjoy.
- Ask your family or friends to help you with tasks you find difficult or tiring.
- Save your energy for things you find most important.

Fatigue can be a symptom of other illnesses, such as anemia, diabetes, thyroid problems, heart disease, rheumatoid arthritis and depression. So be sure to ask your doctor if he or she thinks any of these conditions may be contributing to your fatigue.

Managing Pain

To help your doctor prescribe the best medication, it's useful to give an accurate report of your pain. Keep a journal that includes information on:

- Where the pain occurs.
- When the pain occurs.
- How long it lasts.
- How strong it is on a scale of 1 to 10, with 1 being the least amount of pain and 10 the most intense.
- What makes the pain feel better and what makes it feel more intense.

There are a number of options for pain relief, including prescription and over-the-counter medications. It's important to talk to a member of your health care team before taking any over-the-counter medications, to determine if they are safe and will not interfere with your treatments.

There are options for pain relief that may reduce the need for narcotics and over-the-counter medications:

- **Celiac plexus nerve-block** is a procedure that can be used to treat abdominal pain in pancreatic cancer. The procedure blocks the celiac nerves with the intent to ease pain.
- **Radiation therapy** is sometimes used to lessen the pain of pancreatic cancer that has spread to the bone. In most cases, stereotactic radiosurgery (SRS) is used. It delivers high-dose, precisely-targeted radiation, which can help preserve healthy tissue. In SRS, there are fewer treatments than when radiation is used to treat the cancer itself.

Communicating with Your Health Care Team

As you manage your cancer, it's important to remember that you are a consumer of health care. The best way to make decisions about health care is to educate yourself about your diagnosis and get to know the members of your health care team, including doctors, nurse practitioners, physician assistants, nurses, dietitians, social workers and patient navigators.

Here are some tips for improving communication with your health care team:

Start a health care journal. Having a health care journal or notebook will allow you to keep all of your health information in one place. You may want to write down the names and contact information of the members of your health care team, as well as any questions for your doctor.

Prepare a list of questions. Before your next medical appointment, write down your questions and concerns. Because your doctor may have limited time, ask your most important questions first and be as specific as possible.

Bring someone with you to your appointments. Even if you have a journal and a prepared list of questions or concerns, it's always helpful to have support when you go to your appointments. The person who accompanies you can serve as a second set of ears. He or she may also think of questions to ask your doctor or remember details about your symptoms or treatment that you may have forgotten.

Write down your doctor's answers. Taking notes will help you remember your doctor's responses, advice and instructions. You can also ask the person who accompanies you to take notes for you. If you have a mobile device, ask if you can use it to take notes. Keeping notes will help you review the information later.

Record your visit if your doctor allows it. Recording the conversation with your doctor gives you a chance to hear specific information again or share it with family members or friends.

Incorporate other health care professionals into your team. Your medical oncologist is an essential member of your health care team, but there are other health care professionals who can help you manage your diagnosis and treatment:

- Your primary care physician should be kept updated about your pancreatic cancer treatment and any test results.
- Gastroenterologists specialize in the diagnosis and treatment of diseases of the digestive system and are an important part of a multi-disciplinary team approach in treating patients with pancreatic cancer.
- Your local pharmacist is a great source of knowledge about the medications you are taking. Have all of your prescriptions filled at the same pharmacy to avoid the possibility of harmful drug interactions.
- Make sure your oncologist knows of any other medical conditions you have or any pain you are experiencing so that they can consult with your primary care physician or specialists as needed.

Remember, there is no such thing as over-communication.

Cancer*Care*'s Free Support Services and Programs

Receiving a diagnosis of pancreatic cancer can be very difficult, and adjusting to the necessary changes in your life can be challenging.

Cancer*Care*® can help. We are a national nonprofit organization providing free, professional services to anyone affected by cancer. Our licensed oncology social workers can provide support and education, help in navigating the complicated health care system and offer information on support groups and other resources.

To learn more about how Cancer*Care* helps, call us at 800-813-HOPE (4673) or visit www.cancercare.org.

You will likely also build your own personal support network, comprised of family and friends. In doing so, it's best to take some time to think about the people in your life and how they are best suited to help. Match the task to their strengths—ask a family member who loves to shop to pick up something for you at the store; ask a friend who's a good listener to come over for a chat.

Frequently Asked Questions

Q: Should a person diagnosed with pancreatic cancer seek a second opinion?

A: At the time of diagnosis, it makes sense to seek a consultation from a major cancer center or a group of physicians who are experts in managing pancreatic cancer. Another time to seek a consultation or second opinion is if the cancer is not responding to treatment and/or if a change in treatment is being considered. Discussions can include possible changes in treatment approaches and if participation in a clinical trial should be considered.

Q: How can I tell if I need to increase the dose of pancreatic enzymes I'm taking?

A: Talk to your health care team if you are taking the prescribed dose of pancreatic enzymes and are still experiencing symptoms such as bloating, discomfort after eating or foul-smelling stools. Your doctor may recommend a larger dose or a different brand.

Q: I'm on chemotherapy. Are there any foods that I should avoid? Is it all right to take vitamins?

A: There are no specific foods that should be avoided during chemotherapy, but it's important to note that vitamin supplements should not be taken. Effective chemotherapy requires a process called oxidation. Many supplements contain anti-oxidant properties, which can interfere with treatment.

Q: Should I have my pancreatic cancer sequenced?

A: In a percentage of cases, genomic-sequencing of pancreatic cancers may reveal genetic mutations that match the purpose of current or future clinical trials, or lead to prescribing drugs that are best-suited to the person's individual circumstances. Ask your oncologist if it is in your best interests to have your tumor sequenced.

Q: Should I have genetic testing?

A: About 10 to 15 percent of pancreatic cancers will develop due to the existence of an underlying genetic mutation. For example, about 5 to 6 percent of pancreatic cancers have a BRCA1 or BRCA2 mutation, which may also be associated with a family history of breast, ovarian or prostate cancers. Understanding if genetic mutations exist is an important factor in determining if targeted therapy is the right treatment approach for people with pancreatic cancer.

Resources

Cancer*Care*®
800-813-HOPE (800-813-4673)
www.cancercare.org

American Cancer Society
800-227-2345
www.cancer.org

Cancer.Net
Patient information from the American Society of Clinical Oncology
888-651-3038
www.cancer.net

Cancer Support Community
888-793-9355
www.cancersupportcommunity.org

Hirshberg Foundation for Pancreatic Cancer Research
310-473-5121
www.pancreatic.org

Imerman Angels
866-463-7626
www.imermanangels.org

The Lustgarten Foundation
866-789-1000
www.lustgarten.org

National Cancer Institute
800-422-6237
www.cancer.gov

National Coalition for Cancer Survivorship
877-622-7937
www.canceradvocacy.org

Pancreatic Cancer Action Network
877-435-8650
www.pancan.org

Pancreatica.org
831-658-0600
www.pancreatica.org

Partnership for Prescription Assistance
888-477-2669
www.pparx.org

CLINICAL TRIALS WEBSITES

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www.cancer.gov

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