

## **[Pancreatic Cancer - Treatment Options](#) [1]**

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**ON THIS PAGE:** You will learn about the different ways doctors use to treat people with this type of cancer. To see other pages, use the menu on the side of your screen.

This section outlines treatments that are the standard of care (the best known treatments available) for this specific type of cancer. When making treatment plan decisions, patients are also encouraged to consider clinical trials as an option. A clinical trial is a research study to test a new approach to treatment to evaluate whether it is safe, effective, and possibly better than the standard treatment. Clinical trials may test such approaches as a new drug, a new combination of standard treatments, or new doses of current therapies. Your doctor can help you review all treatment options. For more information, see the [About Clinical Trials](#) [3] and [Latest Research](#) [4] sections.

### **Treatment overview**

In cancer care, different types of doctors and other health care professionals often work together to create a patient's overall treatment plan that combines different types of treatments. This is called a [multidisciplinary team](#) [5]. Cancer care teams also include a variety of other health care professionals, including physician assistants, oncology nurses, social workers, pharmacists, counselors, dietitians, and others.

Descriptions of the most common treatment options for pancreatic cancer are listed below, followed by an outline of treatments by stage. The current treatment options for pancreatic cancer are surgery, radiation therapy, chemotherapy, and targeted therapy. Your care plan may also include treatment for symptoms and side effects, an important part of cancer care.

Treatment options and recommendations depend on several factors, including the type and

stage of cancer, possible side effects, and the patient's preferences and overall health. Take time to learn about all of your treatment options and be sure to ask questions about things that are unclear. Also, talk about the goals of each treatment with your doctor and what you can expect while receiving the treatment. Learn more about [making treatment decisions](#) [6].

When detected at an early stage, pancreatic cancer has a much higher chance of being successfully treated. However, there are also treatments that can help control the disease for patients with later stage pancreatic cancer to help them live longer.

## Surgery

Surgery for pancreatic cancer includes removing all or part of the pancreas, depending on the location and size of the tumor in the pancreas. An area of healthy tissue around the tumor is also often removed. This is called a margin. A goal of surgery is to have "clear margins," which means that there are no cancer cells in the edges of the healthy tissue removed.

A surgical oncologist is a doctor who specializes in treating cancer using surgery. Learn more about the basics of [cancer surgery](#) [7].

Only about 20% of patients with pancreatic cancer are able to have surgery because most pancreatic cancers are first diagnosed when the disease has already spread. If surgery is not an option, you and your doctor will talk about other treatment options.

Surgery for pancreatic cancer may be combined with radiation therapy and/or chemotherapy (see below). Typically, radiation therapy and chemotherapy are given after surgery, called adjuvant therapy. However, these treatments may sometimes be used before surgery to shrink a tumor. This is called neoadjuvant therapy. If these treatments are given before surgery, the tumor may often need to be re-staged before planning surgery.

Different types of surgery are performed depending on the purpose of the surgery:

- **Laparoscopy.** Sometimes, the surgeon may choose to start with a laparoscopy. During a laparoscopy, several small holes are made in the abdomen and a tiny camera is passed into the body while a patient receives anesthesia, which is medication to help block the awareness of pain. This helps the surgeon find out if the cancer has spread to other parts of the abdomen. If it has, surgery to remove the primary tumor is generally not recommended.
- **Surgery to remove the tumor.** Different types of surgery are used depending on where the tumor is located in the pancreas. In all of the surgeries discussed below, nearby lymph nodes are removed as part of the operation. More than one type of surgeon, as well as other specialists, will usually be involved in your surgery.

- If the cancer is located only in the head of the pancreas, the surgeon may do a Whipple procedure. This is an extensive surgery in which the surgeon removes the head of the pancreas and part of the small intestine, bile duct, and stomach, and then reconnects the digestive tract and biliary system. An experienced pancreatic cancer surgeon should perform this procedure.
- If the cancer is located in the tail of the pancreas, the common operation is a distal pancreatectomy. In this surgery, the surgeon removes the tail and body of the pancreas, as well as the spleen.
- If the cancer has spread throughout the pancreas, or is located in many areas in the pancreas, a total pancreatectomy may be needed. A total pancreatectomy is the removal of the entire pancreas, part of the small intestine, a portion of the stomach, the common bile duct, the gallbladder, and the spleen.

After surgery, the patient will need to stay in the hospital for several days and will probably need to rest at home for about a month. Side effects of surgery include weakness, tiredness, and pain for the first few days after the procedure. Other side effects caused by the removal of the pancreas include difficulty digesting food and diabetes from the loss of insulin produced by the pancreas. For more information on relieving these side effects, see Getting care for the symptoms and side effects, below.

## **Radiation therapy**

Radiation therapy is the use of high-energy x-rays or other particles to destroy cancer cells. A doctor who specializes in giving radiation therapy to treat cancer is called a radiation oncologist. The most common type of radiation treatment is called external-beam radiation therapy, which is radiation given from a machine outside the body. Learn more about the basics of [radiation therapy](#) [8].

External-beam radiation therapy is the type of radiation therapy used most often for pancreatic cancer. A radiation therapy regimen (schedule) usually consists of a specific number of treatments given over a set period of time. There are different ways that radiation therapy can be given:

- Longer treatments made up of lower doses given over 5 to 6 weeks
- Shorter treatments of higher doses given over as few as 5 days, also known as stereotactic body radiation (SBRT). This is a newer types of radiation therapy that can provide more localized treatment and requires a fewer number of treatment sessions.

Often, chemotherapy (see below) will be given at the same time as radiation therapy because it can enhance the effects of the radiation therapy, which is called radiosensitization. Combining chemotherapy and radiation therapy may occasionally help shrink the tumor enough so it can be removed by surgery. However, chemotherapy given at the same time as radiation therapy often has to be given at lower doses than when given alone.

It is important to note that radiation therapy may be helpful for decreasing the likelihood of a pancreatic cancer returning or re-growing at the original location, but there remains much uncertainty as to how much, if at all, it lengthens a person's life.

Side effects from radiation therapy may include fatigue, mild skin reaction, nausea, upset stomach, and loose bowel movements. Most side effects go away soon after treatment is finished. Talk with your health care team about what you can expect and how side effects will be managed.

## **Chemotherapy**

Chemotherapy is the use of drugs to destroy cancer cells, usually by stopping the cancer cells' ability to grow and divide. Chemotherapy is given by a medical oncologist, a doctor who specializes in treating cancer with medication.

Systemic chemotherapy gets into the bloodstream to reach cancer cells throughout the body. Common ways to give chemotherapy include an intravenous (IV) tube placed into a vein using a needle or in a pill or capsule that is swallowed (orally).

A chemotherapy regimen (schedule) usually consists of a specific number of cycles given over a set period of time. A patient may receive 1 drug at a time or combinations of different drugs at the same time. The following drugs may be used for pancreatic cancer:

- Capecitabine (Xeloda)
- Erlotinib (Tarceva), a type of Targeted therapy (see below)
- Fluorouracil (5-FU)
- Gemcitabine (Gemzar)
- Irinotecan (Camptosar)
- Leucovorin (Wellcovorin)

- Nab-paclitaxel (Abraxane)
- Nanoliposomal irinotecan (Onivyde)
- Oxaliplatin (Eloxatin)

There are generally more side effects when 2 or more drugs are used together. Combination treatments are usually best for patients who are able to carry out their usual activities of daily living without help.

The choice of which combination to use varies depending on the cancer center and often depends on the oncologist's experience with the drugs, as well as the different side effects and a patient's overall health. For pancreatic cancer, chemotherapy may be described by when and how it is given:

- **First-line chemotherapy.** This is generally the first treatment used for patients with either locally advanced or metastatic pancreatic cancer (see [Stages](#) [9]).
- **Second-line chemotherapy.** When treatment does not work or stops working to control cancer growth, the cancer is called refractory. Sometimes, first-line treatment does not work at all, which is called primary resistance. Or, treatment may work well for a while and then stop being effective later, which is sometimes called secondary or acquired resistance. In these situations, patients may benefit from additional treatment with different drugs if the patient's overall health is good. There is significant ongoing research focused on developing other new treatments for second-line, as well as third-line treatment and beyond. Some of which have shown considerable promise (see the [Latest Research](#) [4] section).
- **Off-label use.** This is when a drug is used to treat conditions not listed on the label, which are the conditions that drug is approved for, or is given differently than the instructions on the label. Off-label drug use in pancreatic cancer treatment is common for many reasons. First, drugs are generally approved for treating only a particular type or stage of cancer. Second, many cancer treatments use a combination of drugs and one or more of the drugs is often being used off label. Drug regimens are also constantly changing as doctors study new combinations to improve patient care. However, off-label use of drugs may not be covered by your health insurance company. Exceptions are possible, but it is important for you and/or your doctor to talk with your insurance company ahead of time.

## Side effects of chemotherapy

The side effects of chemotherapy depend on which drugs the patient receives. In addition, not all patients have the same side effects. Side effects can include poor appetite, nausea, vomiting, diarrhea, gastrointestinal problems, mouth sores, hair loss, and a lack of energy. People receiving chemotherapy also are more likely to get infections and bruise and bleed easily because chemotherapy decreases the production of white blood cells, red blood cells, and platelets. Certain drugs used in pancreatic cancer are also associated with specific side effects. For example, capecitabine can cause redness and discomfort on the palms of the hands and the soles of the feet. This condition is called [hand-foot syndrome](#) [10]. Oxaliplatin can cause cold sensitivity and numbness and tingling in the fingers and toes, called [peripheral neuropathy](#) [11]. Peripheral neuropathy is a side effect of nab-paclitaxel as well. These side effects typically go away between treatments and after the treatments have ended, but some can be longer-lasting and can worsen as treatment continues. The doctor can suggest ways to relieve these [side effects](#) [12].

Learn about the basics of [chemotherapy](#) [13] and [preparing for treatment](#) [14]. The medications used to treat cancer are continually being evaluated. Talking with your doctor is often the best way to learn about the medications prescribed for you, their purpose, and their potential side effects or interactions with other medications. Learn more about your prescriptions by using [searchable drug databases](#) [15].

## Targeted therapy

Targeted therapy is a treatment that targets the cancer's specific genes, proteins or the tissue environment that contributes to cancer growth and survival. This type of treatment blocks the growth and spread of cancer cells while limiting damage to healthy cells.

Recent studies show that not all tumors have the same targets. To find the most effective treatment, your doctor may run tests to identify the genes, proteins, and other factors in your tumor. This helps doctors better match each patient with the most effective treatment whenever possible. In addition, many research studies are taking place now to find out more about specific molecular targets and new treatments directed at them.

The targeted therapy erlotinib is approved by the FDA for patients with advanced pancreatic cancer in combination with gemcitabine. Erlotinib blocks the effect of the epidermal growth factor receptor (EGFR), a protein that can become abnormal and help cancer grow and spread. Side effects of erlotinib include a [skin rash similar to acne](#) [16]. Talk with your doctor about possible side effects for a specific medication and how they can be managed.

Learn more about the basics of [targeted treatments](#) [17].

## Getting care for symptoms and side effects

Cancer and its treatment often cause side effects. In addition to treatment to slow, stop, or eliminate the cancer, an important part of cancer care is relieving a person's symptoms and side effects. This approach is called palliative or supportive care, and it includes supporting the patient with his or her physical, emotional, and social needs.

Palliative care is any treatment that focuses on reducing symptoms, improving quality of life, and supporting patients and their families. Any person, regardless of age or type and stage of cancer, may receive palliative care. It works best when palliative care is started as early as needed in the cancer treatment process. People often receive treatment for the cancer and treatment to ease side effects at the same time. In fact, patients who receive both often have less severe symptoms, better quality of life, and report they are more satisfied with treatment. Palliative care should not be confused with hospice care, which is discussed further below.

Palliative treatments vary widely and often include medication, nutritional changes, relaxation techniques, emotional support, and other therapies. You may also receive palliative treatments similar to those meant to eliminate the cancer, such as chemotherapy, surgery, or radiation therapy. Talk with your doctor about the goals of each treatment in the treatment plan.

Before treatment begins, talk with your health care team about the possible side effects of your specific treatment plan and palliative care options. And during and after treatment, be sure to tell your doctor or another health care team member if you are experiencing a problem so it can be addressed as quickly as possible.

Supportive care for people with pancreatic cancer includes:

- **Palliative chemotherapy.** Any chemotherapy regimen discussed above may help relieve the symptoms of pancreatic cancer, such as lessening pain, improving a patient's energy and appetite, and stopping or slowing weight loss. When making decisions about palliative chemotherapy, it is important that you and your doctor weigh the benefits with the possible side effects and consider how each treatment might affect your quality of life.
- **Relieving bile duct or small intestine blockage.** If the tumor is blocking the common bile duct or small intestine, placement of a tiny tube called a stent to help keep the blocked area open can be performed to relieve the blockage using nonsurgical approaches, such as ERCP, PTC, or endoscopy (see the [Diagnosis](#) [18] section for more information). A stent can be either plastic or metal. The type used depends on the availability, cost, a person's expected lifespan, and whether the cancer will eventually be removed with surgery. In general, plastic stents are less expensive and are easier to insert and remove, but need to be replaced every few months, are associated with more infections, and more likely to move out of place. Stents are typically placed inside the body, but sometimes, a tube may need to be placed through a hole in the skin of the abdomen to drain fluid, such

as bile, to the outside, called percutaneous drainage. Sometimes, a patient may need surgery to create a bypass, even if the tumor itself cannot be completely removed.

- **Improving digestion and appetite.** A special diet, medications, and specially prescribed enzymes may help a person digest food better if their pancreas is not working well or has been partially or entirely removed. Meeting with a nutritionist is recommended for most patients, especially those who are losing weight and have a poor appetite because of the disease.
- **Controlling diabetes.** Insulin will usually be recommended if a person develops diabetes due to the loss of insulin produced by the pancreas, which is more common after a total pancreatectomy.
- **Relieving pain and other side effects.** Radiation therapy may be given to help relieve pain. Gemcitabine has also been shown to improve cancer-related symptoms, such as weight loss, pain, and weakness. Morphine-like drugs called opioid analgesics are often needed to help reduce pain. Special types of nerve blocks done by pain specialists may also be used. One type of nerve block is a celiac plexus block, which helps relieve abdominal pain. During a nerve block, the nerves are injected with either an anesthetic to stop pain for a short time or a medication that destroys the nerves and can relieve pain for a longer time. A nerve block can be performed either through the skin or through an [endoscope](#) [19] that is placed through the mouth and past the stomach. Learn more about [managing pain](#) [20].

Recommended supportive care may also include [complementary and alternative therapies](#) [21].

Palliative and supportive care is not limited to managing a patient's physical symptoms. There are also emotional and psychological issues patients experience that can be managed with professional help and support, such as anxiety, depression, help with coping skills, and the overall difficulty of dealing with cancer. Cancer also affects caregivers and loved ones, and they are encouraged to develop support networks as well.

Learn more about [palliative care](#) [22].

## **Treatment options by stage (Updated 05/2016)**

Below are some of the possible treatments based on the stage of the cancer. The information below was updated in May 2016 based on ASCO guidelines for the treatment of pancreatic cancer. Your care plan may also include treatment for symptoms and side effects, an important part of pancreatic cancer care. Also, all patients are encouraged to consider clinical trials as a treatment option. Talk to your doctor about all of your treatment options. Your doctor will have

the best information about which treatment plan is recommended for you.

### **Potentially curable pancreatic cancer (also called resectable and borderline resectable pancreatic cancer)**

- Surgery
  - Removal of the tumor and nearby lymph nodes if there are no signs that the disease has grown beyond the pancreas or spread to other parts of the body.
- Treatment before surgery, also called neoadjuvant therapy
  - Chemotherapy, with or without radiation, to try to shrink the tumor and increase the chance that the surgeon can remove the tumor with clear margins
- Treatment after surgery, also called adjuvant therapy
  - 6 months of chemotherapy with gemcitabine (or, less commonly, fluorouracil and leucovorin) for patients who did not receive additional treatment before surgery.
  - The role of radiation therapy after surgery remains controversial. The option to use radiation therapy after surgery depends on each patient's situation. For example, it may be an option for patients who did not have clear margins after surgery.
  - For patients who received treatment before surgery, the need for additional treatment depends on the each patient's situation and overall health.

### **Locally advanced pancreatic cancer**

- First-line therapy
  - Chemotherapy with a combination of drugs depending on each patient's situation and overall health (see options listed under Metastatic pancreatic cancer, below)
  - Radiation therapy may also be an option. It is used most often after chemotherapy

when the cancer has not spread beyond the pancreas. The choice of type of radiation therapy, such as standard external beam or SBRT (see Radiation therapy above), depends on several factors, including the size and location of the tumor.

- Second-line therapy
  - If the disease worsens during or after first-line treatment, options may include trying different chemotherapy. Or, it may be possible to use radiation therapy if the tumor has not spread beyond the pancreas and the patient has not already received it.
- Clinical trials
  - If standard treatment options are not working, patients may want to consider a clinical trial. Talk with your doctor about clinical trials that may be open to you.

## **Metastatic pancreatic cancer**

If cancer has spread to another location in the body, it is called metastatic cancer. Patients with this diagnosis are encouraged to talk with doctors who are experienced in treating this stage of cancer, because there can be different opinions about the best treatment plan. Learn more about getting a [second opinion](#) [23] before starting treatment, so you are comfortable with the treatment plan chosen. This discussion may include [clinical trials](#) [3].

Your health care team may recommend a treatment plan that includes a combination of the treatments discussed above. Treatment options for patients with metastatic pancreatic cancer depend heavily on a patient's overall health and preferences.

First-line options include:

- Chemotherapy with a combination of fluorouracil, leucovorin, irinotecan, and oxaliplatin, called FOLFIRINOX.
- Gemcitabine plus nab-paclitaxel, either as first-line treatment or a second-line treatment for those who already received FOLFIRINOX.
- Gemcitabine only for patients who are not healthy enough for the 2 combinations above, due to the side effects.

Second-line options include those listed below. These are generally for patients who have had the disease worsen or experienced severe side effects during first-line therapy.

- For patients who have already received gemcitabine and nab-paclitaxel, a combination of fluorouracil and leucovorin with either nanoliposomal irinotecan, irinotecan, or oxaliplatin are possible options. For patients who are not healthy enough to receive multiple drugs, capecitabine only could be an option that causes fewer side effects.
- For patients who have already received FOLFIRINOX, a regimen using gemcitabine, such as gemcitabine alone or in combination with nab-paclitaxel could be an option.

Palliative care will also be important to help relieve symptoms and side effects.

For most patients, a diagnosis of metastatic cancer is very stressful and, at times, difficult to bear. Patients and their families are encouraged to talk about the way they are feeling with doctors, nurses, social workers, or other members of the health care team. It may also be helpful to talk with other patients, including through a support group.

## **Remission and the chance of recurrence**

A remission is when cancer cannot be detected in the body and there are no symptoms. This may also be called having “no evidence of disease” or NED.

A remission may be temporary or permanent. This uncertainty causes many people to worry that the cancer will come back. While many remissions are permanent, it’s important to talk with your doctor about the possibility of the cancer returning. Understanding your risk of recurrence and the treatment options may help you feel more prepared if the cancer does return. Learn more about [coping with the fear of recurrence](#) [24].

If the cancer does return after the original treatment, it is called recurrent cancer. Pancreatic cancer may come back in or near the pancreas (called a local or regional recurrence), or elsewhere in the body (distant recurrence, which is similar to metastatic disease).

When this occurs, diagnostic testing will begin again to learn as much as possible about the extent and location of the recurrence. After testing is done, you and your doctor will talk about your treatment options. The treatment of recurrent pancreatic cancer is similar to the treatments described above and usually involves chemotherapy (see first-line and second-line chemotherapy above). Radiation therapy or surgery may also be used to help relieve symptoms (see above). Your doctor may also suggest clinical trials that are studying new ways to treat this type of recurrent cancer. Whichever treatment plan you choose, palliative care will be important for relieving symptoms and side effects.

People with recurrent cancer often experience emotions such as disbelief or fear. Patients are encouraged to talk with their health care team about these feelings and ask about support services to help them cope. Learn more about [dealing with cancer recurrence](#) [25].

## If treatment fails

Recovery from cancer is not always possible. If the cancer cannot be cured or controlled, the disease may be called advanced or terminal.

This diagnosis is stressful, and advanced cancer is difficult to discuss for many people. However, it is important to have open and honest conversations with your doctor and health care team to express your feelings, preferences, and concerns. The health care team is there to help, and many team members have special skills, experience, and knowledge to support patients and their families. Making sure a person is physically comfortable and free from pain is extremely important.

Patients who have advanced cancer and who are expected to live less than 6 months may want to consider a type of palliative care called hospice care. Hospice care is designed to provide the best possible quality of life for people who are near the end of life. You and your family are encouraged to think about where you would be most comfortable: at home, in the hospital, or in a hospice environment. Nursing care and special equipment can make staying at home a workable alternative for many families. Learn more about [advanced cancer care planning](#) [26].

After the death of a loved one, many people need support to help them cope with the loss. Learn more about [grief and loss](#) [27].

*The [next section in this guide is About Clinical Trials](#) [3] and it offers more information about research studies that are focused on finding better ways to care for people with cancer. Or, use the menu on the side of your screen to choose another section to continue reading this guide.*

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### Links

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

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

[3] <http://www.cancer.net/node/19503>

[4] <http://www.cancer.net/node/19506>

[5] <http://www.cancer.net/node/25356>

[6] <http://www.cancer.net/node/24582>

[7] <http://www.cancer.net/node/24720>

[8] <http://www.cancer.net/node/24728>

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

[10] <http://www.cancer.net/node/25252>

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[12] <http://www.cancer.net/node/25238>

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