Treating Gastrointestinal Carcinoid Tumors

If you've been diagnosed with a gastrointestinal (GI) carcinoid tumor, your cancer care team will discuss your treatment options with you. It's important to weigh the benefits of each treatment option against the possible risks and side effects.

Which treatments are used for GI Carcinoid Tumors?

The main types of treatment for GI carcinoid tumors are:

- Surgery for Gastrointestinal Carcinoid Tumors
- Chemotherapy and Other Drugs for Gastrointestinal Carcinoid Tumors

Who treats GI carcinoid tumors?

Based on your treatment options, you might have different types of doctors on your treatment team, including:

- A **surgical oncologist**: a doctor who treats cancer with surgery
- A **medical oncologist**: a doctor who treats cancer with medicines
- A **radiation oncologist:** a doctor who treats cancer with radiation therapy
- A **gastroenterologist**: a doctor who specializes in treatment of diseases of the gastrointestinal (digestive) system
- An **endocrinologist:** a doctor who specializes in the diagnosis and treatment of diseases related to hormones

You might have many other specialists on your treatment team as well, including physician assistants (PAs), nurse practitioners (NPs), nurses, nutrition specialists, social workers, rehabilitation specialists, psychologists, and other health professionals.

- Health Professionals Associated with Cancer Care

Making treatment decisions

It's important to discuss and understand all your treatment options, including their goals and possible side effects, with your doctors to help make the decision that best fits your needs.

Take your time and think about all your options when you make this important decision. If time allows, it's often a good idea to get a second opinion. A second opinion may give you more information and help you feel more confident about the treatment plan you choose.

It's also very important to ask questions if you're not sure about something.

Questions to Ask About Gastrointestinal C1 w P9/d tumare

newer treatments. They are also the best way for doctors to learn better methods to treat cancer. Still, they're not right for everyone.

If you would like to learn more about clinical trials that might be right for you, start by asking your doctor if your clinic or hospital conducts clinical trials.

- Clinical Trials

Considering complementary and alternative methods

You may hear about alternative or complementary methods that your doctor hasn’t mentioned to treat your cancer or relieve symptoms. These methods can include vitamins, herbs, and special diets, or other methods such as acupuncture or massage,

The American Cancer Society also has programs and services to help you get through treatment. Options include rides to treatment, lodging, and more. Call us at 1-800-227-2345 and speak with one of our caring, trained specialists.

- Palliative Care
- Programs & Services

Choosing to stop treatment or choosing no treatment at all

For some people, when treatments have been tried and are no longer controlling the cancer, it could be time to weigh the benefits and risks of continuing to try new treatments. Whether or not you continue treatment, there are still things you can do to help maintain or improve your quality of life.

Some people, especially if the cancer is advanced, might not want to be treated at all. There are many reasons you might decide not to get cancer treatment, but it's important to talk to your doctors before you make that decision. Remember that even if you choose not to treat the cancer, you can still get supportive care to help with pain or other symptoms.

- If Cancer Treatments Stop Working

The treatment information given here is not official policy of the American Cancer Society and is not intended as medical advice to replace the expertise and judgment of your cancer care team. It is intended to help you and your family make informed decisions, together with your doctor. Your doctor may have reasons for suggesting a treatment plan different from these general treatment options. Don't hesitate to ask your cancer care team any questions you may have about your treatment options.

More in Gastrointestinal Carcinoid Tumors

- About Gastrointestinal Carcinoid Tumors
- Causes, Risk Factors, and Prevention

Surgery for Gastrointestinal Carcinoid Tumors

Many gastrointestinal (GI) carcinoid) tumors can be cured by surgery alone. The type of operation will depend on a number of factors, including the size and location of the tumor, whether the person has any other serious diseases, and whether the tumor is causing the carcinoid syndrome.

Surgeons often try to cure localized carcinoid tumors by removing them completely, which is usually successful.

The options for GI carcinoid tumors that have spread to nearby tissues or to distant parts of the body are more complex. Because most carcinoid tumors grow slowly and some do not cause any symptoms, completely removing all metastatic carcinoid tumors may not always be needed. But in some patients, surgery to remove all visible cancer is the best option. This is particularly true if removing most of the cancer will reduce the level of hormone-like substances causing symptoms.

Several types of operations can be used to treat GI carcinoid tumors. Some of these remove the primary tumor (where the cancer started), while others remove or destroy cancer that has spread (metastasized) to other organs.

Endoscopic mucosal resection

In this procedure, the cancer is removed through an endoscope. This is most often used to treat small carcinoid tumors of the stomach and duodenum (the first part of the small intestine) and it also can be used to remove small carcinoid tumors of the rectum.

Local excision

This operation removes the primary tumor and some normal tissue around it. The edges of the defect are then sewn together. This usually doesn’t cause any prolonged problems with eating or bowel movements. This operation may be done for small carcinoid tumors (no larger than 2 cm, or a little less than an inch).

Carcinoid tumors are sometimes removed during an operation being done for some

other reason. This often happens with carcinoid tumors of the appendix. When the appendix is removed (for some other reason), it is examined after surgery, and sometimes a carcinoid tumor is found. Most doctors believe that if the tumor is small — 2 cm or less — removing the appendix (appendectomy) is curative and no other surgery is needed. If the tumor is larger than 2 cm, more surgery may be needed.

Rectal carcinoid tumors may be taken out through the anus, without cutting the skin. Other GI carcinoid tumors can sometimes be locally excised through an endoscope but usually it is done through an incision (cut) in the skin.

More extensive surgeries

A larger incision (cut) is needed to remove a larger tumor along with nearby tissues. This also gives the surgeon the chance to see if the tumor has grown into other tissues in the abdomen (belly). If it has, the surgeon may be able to remove the areas of cancer spread.

Partial gastrectomy: In this operation, part of the stomach is removed. If the upper part is removed, sometimes part of the esophagus is removed as well. If the lower part of the stomach is removed, sometimes the first part of the small intestine (the duodenum) is also taken. Nearby lymph nodes are also removed. This operation is also known as a **subtotal gastrectomy**.

Small bowel (intestine) resection: This is an operation to remove a piece of the small intestine (also called the small bowel). When it is used to treat a small bowel carcinoid, this surgery includes removing the tumor and some of the small bowel around it (called a **wide margin resection**). It will also remove nearby (regional) lymph nodes and the supporting connective tissue (called the mesentery) that contains lymph nodes and vessels that carry blood to and from the intestine. Tumors in the terminal ileum (the last part of the small bowel) may require removing the right side of the colon (**hemicolectomy**).

Pancreaticoduodenectomy (Whipple procedure): This operation is most often used to treat pancreatic cancer, but it is also used to treat cancers of the duodenum (the first part of the small intestine). It removes the duodenum, part of the pancreas, nearby lymph nodes and part of the stomach. The gallbladder and part of the common bile duct are removed and the remaining bile duct is attached to the small intestine so that bile from the liver can continue to enter the small intestine. This is a complex operation that requires a lot of skill and experience. It carries a relatively high risk of complications that could even be fatal.

Segmental colon resection or hemicolectomy: This operation removes between one-

cancer cells by injecting concentrated alcohol directly into the tumor. This is usually done through the skin using a needle guided by ultrasound or CT scans.

Microwave thermotherapy

Uses microwaves to heat and destroy the cancer cells.

Cryosurgery (cryotherapy)

Cryotherapy destroys a tumor by freezing it with a metal probe. The probe is guided through the skin and into the tumor using ultrasound. Then very cold gasses are passed through the probe to freeze the tumor, killing the cancer cells. This method may be used to treat larger tumors compared to the other ablation techniques, but it sometimes requires general anesthesia (where you are asleep).

Embolization

Intra-arterial therapy and chemoembolization (also known as transarterial embolization or TAE): This is another option for tumors that can't be removed completely. It can be used for larger tumors (up to about 5 cm or 2 inches across). This technique reduces the blood flow to the cancer cells by blocking the branch of the hepatic artery[2] feeding the area of the liver containing the tumor. Blood flow is blocked (or reduced) by injecting materials that plug up the artery. Most of the healthy liver cells will not be affected because they get their blood supply from a different blood vessel, the portal vein.

In this procedure a thin, flexible catheter is put into an artery in the inner thigh and threaded up into the liver. A dye is then injected into the bloodstream to allow the doctor to monitor the path of the catheter via angiography, a special type of x-ray. Once the catheter is in place, small particles are injected into the artery to plug it up.

Chemoembolization (also known as trans-arterial chemoembolization or TACE): This procedure combines embolization with chemotherapy. Most often, this is done by using tiny beads that release a chemotherapy drug during the embolization. TACE can also be done by giving chemotherapy through a thin catheter directly into the artery, then plugging up the artery.

Radioembolization: In the United States, this is done by injecting small radioactive beads into the hepatic artery. The beads travel to the tumor and give off small amounts of radiationonly at the tumor sites.

More information about Surgery

For more general information about surgery as a treatment for cancer, see Cancer Surgery[3].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[4].

Hyperlinks

1. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/colostomy.html
2. www.cancer.org/cancer/types/liver-cancer/treating/chemotherapy.html
3. www.cancer.org/cancer/managing-cancer/treatment-types/surgery.html
4. www.cancer.org/cancer/managing-cancer/side-effects.html
5. www.cancer.gov/types/gi-carcinoid-tumors/hp/gi-carcinoid-treatment-pdq#section/_21
6. www.nccn.org/professionals/physician_gls/pdf/neuroendocrine.pdf
7. www.cancer.org/cancer/types/gastrointestinal-carcinoid-tumor/references.html

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https://www.nccn.org/professionals/physician_gls/pdf/neuroendocrine.pdf[6] on July 29, 2018.

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Some tumors, especially high-grade tumors, may be treated with more than one drug. For these, combinations of 5-FU plus streptozocin, 5-FU plus doxorubicin or oxaliplatin plus capecitabine may be used.

Doctors give chemo in cycles, with each period of treatment followed by a rest period to allow the body time to recover. Chemo cycles generally last about 3 to 4 weeks, and initial treatment is typically 4 to 6 cycles.

Possible side effects of chemotherapy

Chemo drugs damage cells that are dividing quickly, which is why they can work against cancer cells. But other cells in the body, such as those in the bone marrow (where new blood cells are made), the lining of the mouth and intestines, and the hair follicles, also divide quickly. These cells are also likely to be affected by chemo, which can lead to side effects.

The side effects[1] of chemo depend on the type and dose of drugs given and the length of time they are taken. Common side effects can include:

- Nausea and vomiting[2]
- Loss of appetite
- Hair loss
- Mouth sores
- Diarrhea or constipation
- Increased chance ofinfections [3] (from having too few white blood cells)
- Easy bruising or bleeding (from having too few blood platelets
- Fatigue[4](from having too few red blood cells)

Most side effects go away a short time after treatment is finished. Often medicines can help prevent or minimize many of the side effects. For example, your doctor can prescribe drugs to help prevent or reduce nausea and vomiting.

You should tell your medical team about any side effects or changes you notice while getting chemotherapy, so that they can be treated promptly. In some cases, the doses of the chemo drugs may need to be reduced or treatment may need to be delayed or stopped to keep the effects from worsening.

For more information on chemo, see Chemotherapy[5].

Other drugs used for treating gastrointestinal carcinoid tumors

For people with metastatic GI carcinoid tumors, several medicines can help control symptoms and tumor growth.

Somatostatin analogs

These drugs are related to somatostatin, a natural hormone that seems to help slow the growth of neuroendocrine cells. They are especially useful in people who have carcinoid syndrome[6](facial flushing, diarrhea, wheezing, rapid heart rate) and in people whose tumors show up on a somatostatin receptor scintigraphy[7] (SRS) scan or gallium-68 Dotatate scans[8].

Octreotide: This drug is helpful in treating the symptoms of carcinoid syndrome. Sometim2.0c.a0 /GS40sotemporariialshdock GI carcinoid tumorbut it dotimnot curhose

hypersecretion. UpToDate website. https://www.uptodate.com/contents/metastatic-gastroenteropancreatic-neuroendocrine-tumors-local-options-to-control-tumor-growth-and-symptoms-of-hormone-hypersecretion? Updated Dec. 11, 2017. Accessed August 5, 2018.

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See all references for Gastrointestinal Carcinoid Tumor

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Radiation Therapy for Gastrointestinal Carcinoid Tumors

Radiation therapy is the use of high-energy rays (such as x-rays) or radioactive particles to kill cancer cells.

Although surgery is the main treatment for most carcinoid tumors, radiation therapy may be an option for those who can't have surgery for some reason. It may also be given after surgery in some cases if there's a chance some of the tumor was not removed. Radiation therapy can also be used to help relieve symptoms such as pain if the cancer has spread to the bones or other areas.

External beam radiation therapy (EBRT)

External beam radiation therapy uses a machine to deliver a beam of radiation to a specific part of the body. This type of radiation is used most often to treat cancer.

Side effects of gastrointestinal (GI) radiation therapy

The main side effects of GI radiation therapy are:

- Tiredness (fatigue)
- Nausea and vomiting
- Diarrhea (if the belly or pelvis is treated)
- Skin changes, which can range from mild redness to blistering and peeling
- Hair loss in the area being treated

Procedures using radioactive drugs

Radioembolization

This technique combines embolization with radiation therapy and is used to treat liver metastases.

Embolization is a procedure that injects substances to try to block or reduce the blood flow to cancer cells in the liver. The liver is unusual in that it has 2 blood supplies. Most normal liver cells are fed by the portal vein, whereas cancer cells in the liver are usually

fed by the hepatic artery[1]. Blocking the branch of the hepatic artery feeding the tumor helps kill off the cancer cells, but it leaves most of the healthy liver cells unharmed because they get their blood supply from the portal vein.

In this procedure, a catheter (a thin, flexible tube) is put into an artery through a small cut in the inner thigh and eased up into the hepatic artery in the liver. A dye is injected into the blood at the same time to allow the doctor to monitor the path of the catheter via angiography, a special type of x-ray. Once the catheter is in place, small particles called microspheres are injected into the artery to plug it up.

In radioembolization, microspheres (small beads) that are attached to a radioactive element called **yttrium-90 (or 90Y)** are used. After they are injected, the beads travel in the liver blood vessels until they get stuck in small blood vessels near the tumor. There they give off radioactivity for a short while, killing nearby tumor cells. The radiation travels a very short distance, so its effects are limited mainly to the tumor.

Peptide receptor radionuclide therapy (PRRT)

In this form of radiation therapy, a drug is linked to a radioactive element. The drug travels throughout the body, attaches to the cancer cells, and gives off radiation to kill them. It is given through a vein and not directly into the liver like radioembolization.

One option is to use somatostatin analog drugs like octreotide or lanreotide linked with a radioactive form of the element yttrium-90. Another option uses a different radioactive element, called lutetium (Lu-177), that is carried to the cancer cells by dotatate where it attaches to carcinoid tumor cells. These injectable therapies let doctors deliver high doses of radiation directly to the tumors.

For adults and pediatric patients 12 years and older with somatostatin (a type of hormone) receptor-positive GI carcinoid tumors, a radioactive drug, called Lutathera (lutetium Lu- 177 dotatate), can be used for treatment. Lu-177 dotatate,a radiopharmaceutical[2], works by attaching to the somatostatin receptor (protein), which is part of the cancer cell, allowing radiation to enter the cell and cause damage. If you are taking octreotide or lanreotide, you will most likely be asked to stop taking these medicines before Lu-177 dotatate is given.

Common side effects of Lu-177 dotatate include low levels of white blood cells, high levels of enzymes in certain organs, nausea and vomiting, high levels of blood sugar, and low levels of potassium in the blood.

Serious side effects of Lu-177 dotatate include low levels of blood cells, development of certain blood or bone marrow cancers, kidney damage, liver damage, abnormal levels

of hormones in the body, and infertility. Women who are pregnant or might become pregnant should be advised that Lu-177 dotatate can cause harm to a developing fetus.

Lu-177 dotatate is given intravenously and does expose those taking it and possibly others around them to radiation. Family members should know how to protect themselves[3] from being exposed to the radiation.

More information about radiation therapy

To learn more about how radiation is used to treat cancer, see Radiation Therapy[4].

To learn about some of the side effects listed here and how to manage them, see Managing Cancer-related Side Effects[5].

Hyperlinks

1. www.cancer.org/cancer/types/liver-cancer/treating/chemotherapy.html
2. www.cancer.org/cancer/managing-cancer/treatment-types/radiation/systemic-radiation-therapy.html
3. www.cancer.org/cancer/managing-cancer/treatment-types/radiation/systemic-radiation-therapy.html.

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See all references for Gastrointestinal Carcinoid Tumor

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Treatment of Gastrointestinal Carcinoid Tumors, by Extent of Disease

Treatment of GI carcinoid tumors is based mostly on their size or how far they have grown into the wall of the organ where they started, as well as if they have spread.

Localized GI carcinoid tumors

A tumor is localized when it has not spread outside the organ where it started.

Stomach

Carcinoid) tumors of the stomach are generally grouped by:

- The level of a hormone called **gastrin** and
  The amount of acid in the stomach (measured before surgery

Rectum

Most rectal carcinoid tumors that are smaller than 1 cm (slightly less than half an inch) can be removed by an endoscope or local excision through the anus .

The best approach for rectal carcinoid tumors between 1 and 2 cm, depends on how deeply the tumor has grown into the wall of the rectum, as well as if it has invaded the nearby lymph nodes. Doctors can check for this before surgery by using an endoscopic ultrasound. If the tumor has grown into the thick muscle layer of the rectum (the muscularis propria) or deeper or if local lymph nodes have tumor cells, it needs to be treated the same as a larger tumor. If not, it may still be able to be removed by endoscope or local excision through the anus.

Tumors larger than 2 cm (and those that have grown deep into the wall of the rectum) have a higher risk of growing and spreading, so they are removed by the same operations used for adenocarcinomas (the usual type of rectal cancer). This operation is a low anterior resection if the tumor is in the upper part of the rectum. If the lower part is involved, abdominoperineal (AP) resection and colostomy[1] are used.

Regional spread

Regional spread means that the cancer has either spread to nearby lymph nodes or it has grown through the wall of the organ where it started and has invaded nearby tissues such as fat, ligaments, and muscle.

If possible, the primary (main) tumor and any areas of cancer spread should all be removed by surgery. Nearby lymph nodes should be removed and checked for signs of cancer spread. This provides the best chance of cure. If this can't be done, surgery should remove as much cancer as possible without causing severe side effects. Surgery should also be done to relieve symptoms such as intestinal blockage caused by the local growth of the tumor.

If all of the tumor cannot be removed at the time of surgery, treatment with somatostatin drugs, like octreotide or lanreotide, or targeted drugs, like everolimus, can be considered because they may control the remaining cancer.

Distant spread

At this stage, the cancer has spread to other organs such as the liver and a cure is not usually possible.Treatment is not always needed right away, depending on how quickly the tumors are growing. The goal of surgery in this situation is usually to relieve

symptoms and slow the course of the disease. For example, removing or bypassing areas blocked by cancer growth can relieve some symptoms. If distant metastases are not causing symptoms, treatment may not be needed. If the cancer has spread to the liver, even when it isn't causing symptoms, some doctors recommend treatment with octreotide or lanreotide, chemotherapy, ortargeted therapy because it may slow tumor growth.

If carcinoid syndrome is causing bothersome symptoms, treatment options include chemotherapy, targeted therapy, treatment with octreotide or lanreotide, or surgery to remove the metastatic tumors. If metastatic tumors in the liver cannot be removed by surgery without causing severe side effects, ablation or embolization can be used to destroy as much of the tumors as possible. Patients should also be advised to avoid alcoholic drinks, stress, strenuous exercise, spicy foods, and certain medicines that can make the symptoms of carcinoid syndrome worse.

Recurrent carcinoid tumors

When cancer comes back after treatment it is called a recurrence. Recurrence can be local (in or near the same place it started) or distant (spread to organs such as the lungs or bone). Patients with recurrent carcinoid tumors are treated sometimes with surgery to remove all signs of tumor if possible. This provides the best chance for a good long-term outcome. If surgery is not possible, the treatments used for distant spread may be helpful. For more information, see Understanding Recurrence[2].

Neuroendocrine carcinomas

Gastrointestinal neuroendocrine carcinomas (NECs) are high-grade (grade 3) tumors that grow very quickly. There are also some low- (grade 1) and intermediate-grade (grade 2) carcinoid tumors that act like neuroendocrine carcinomas because they grow fast. These cancers are treated differently from most carcinoid tumors (grade 1 and 2) because they are treated with chemotherapy first.

Carcinoid heart disease

The substances released into the blood by some carcinoid tumors can damage the heart. Early symptoms are fatigue and shortness of breath. Eventually, patients get fluid in their legs and even their abdomen. The major cause is damage to the valves of the heart. Doctors can usually make the diagnosis by listening to the heart and by an ultrasound of the heart called an echocardiogram.

The main treatment is with a somatostatin analog like octreotide or lanreotide to block the tumor's secretion of the toxic substances. Drugs (diuretics) to get rid of extra fluid can also help. In some instances, heart surgery may be needed to replace the damaged valves.

Hyperlinks

1. www.cancer.org/cancer/managing-cancer/treatment-types/surgery/ostomies/colostomy.html
2. www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence.html
3. www.cancer.org/cancer/types/gastrointestinal-carcinoid-tumor/references.html

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See all references for Gastrointestinal Carcinoid Tumor

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