Small Intestine Cancer Early Detection, Diagnosis, and Staging

Detection and Diagnosis

Catching cancer early often allows for more treatment options. Some early cancers may have signs and symptoms that can be noticed, but that is not always the case.

- Can Small Intestine Cancer (Adenocarcinoma) Be Found Early?
- Signs and Symptoms of Small Intestine Cancer (Adenocarcinoma)
- Tests for Small Intestine Cancer (Adenocarcinoma)

Stages and Outlook (Prognosis)

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and anticipated response to treatment.

- Small Intestine Cancer (Adenocarcinoma) Stages
- Survival Rates for Small Intestine Cancer (Adenocarcinoma), by Stage

Questions to Ask About Small Intestine Cancer

Get some questions you can ask your cancer care team to help you better understand your cancer diagnosis and treatment options.

- Questions to Ask Your Doctor About Small Intestine Cancer

Can Small Intestine Cancer (Adenocarcinoma) Be Found Early?
(Note: This information is about small intestine cancers called adenocarcinomas. To learn about other types of cancer that can start in the small intestine, see Gastrointestinal Carcinoid Tumors, Gastrointestinal Stromal Tumors, or Non-Hodgkin Lymphoma.)

Screening is testing for diseases like cancer in people who do not have any symptoms. Screening tests can find some types of cancer early, when treatment is most likely to be effective. But small intestine adenocarcinomas are rare, and no effective screening tests have been found for these cancers, so routine testing for people without any symptoms is not recommended.

For people at high risk

For people with certain inherited genetic syndromes who are at increased risk of small intestine cancer, doctors might recommend regular tests to look for cancer early, especially in the duodenum (the first part of the small intestine). Tests that might be done include upper endoscopy (in which a long tube with a tiny video camera on the end is passed down the throat, through the stomach, and into the duodenum), CT scans, and endoscopic ultrasound (EUS). See Tests for Small Intestine Cancer (Adenocarcinoma) to learn more about these tests.

- References


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Signs and Symptoms of Small Intestine Cancer (Adenocarcinoma)

(Note: This information is about small intestine cancers called adenocarcinomas. To learn about other types of cancer that can start in the small intestine, see Gastrointestinal Carcinoid Tumors, Gastrointestinal Stromal Tumors, or Non-Hodgkin Lymphoma.)

The symptoms of small intestine cancers are often vague and can have other, more common causes. Unfortunately, this means that it’s often at least several months from the time symptoms start until the cancer is diagnosed.

Some of the more common symptoms of small intestine cancer are:

- Pain in the belly (abdomen)
- Nausea and vomiting
- Weight loss (without trying)
- Weakness and feeling tired (fatigue)
- Dark-colored stools (from bleeding into the intestine)
- Low red blood cell counts (anemia)
- Yellowing of the skin and eyes (jaundice)

Often, the first symptom is pain in the stomach area. This pain is often crampy and may not be constant. For example, it may start or get worse after you eat.

As the tumor gets larger, it can slow the passage of digested food through the intestine. This can lead to increased pain. If the tumor gets large enough, it can cause an obstruction, in which the intestine is completely blocked and nothing can move through. This leads to pain with severe nausea and vomiting.

Rarely, a cancer will cause a hole (perforation) to form in the wall of the intestine. This hole lets the contents of the intestine spill into the abdomen. Symptoms of perforation can include sudden severe pain, nausea, and vomiting.

Sometimes a tumor will start bleeding into the intestine. If the bleeding is slow, it could lead to a low red blood cell count (anemia) over time. Symptoms of anemia include
weakness and fatigue. If the bleeding is rapid, the stool can become black and tarry from digested blood, and the person may feel lightheaded or even pass out.

Less often, a tumor in the duodenum (the first part of the small intestine) can cause jaundice. This can happen if the tumor blocks the bile duct, which can prevent the contents from the liver from entering the intestine.

These problems are more often caused by things other than cancer. Still, if you have any of them, especially if they don't go away or are getting worse, have them checked by your doctor to find the cause so it can be treated, if needed.

- References


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Tests for Small Intestine Cancer (Adenocarcinoma)

(Note: This information is about small intestine cancers called adenocarcinomas. To learn about other types of cancer that can start in the small intestine, see Gastrointestinal Carcinoid Tumors, Gastrointestinal Stromal Tumors, or Non-Hodgkin Lymphoma.)
Small intestine cancers are often found because of signs or symptoms a person is having. But these symptoms aren’t usually enough to know for sure if a person has a small intestine cancer or some other type of health problem. If a tumor is suspected, exams and tests will be needed to confirm the diagnosis.

Medical history and physical exam

When a doctor takes your medical history, you will be asked about your symptoms, possible risk factors, family history, and other medical conditions. The doctor will then examine you, focusing on your abdomen looking for any swelling or sounds of the bowel trying to overcome a blockage.

Blood tests

If your doctor suspects a small intestine cancer, he or she will likely order some blood tests, such as:

- A complete blood count (CBC), which measures the levels of red blood cells, white blood cells, and platelets. Small intestine cancer often causes bleeding into the intestines, which can lead to a low red blood cell count (anemia).
- Blood chemistry tests to look for signs that a cancer might have spread to the liver, or other problems.

Imaging tests

Imaging tests use x-rays, magnetic fields, or radioactive substances to create pictures of the inside of the body. Imaging tests might be done for a number of reasons, including:

- To help determine if symptoms are being caused by a tumor
- To learn how far cancer has spread
- To help determine if treatment is working
- To look for signs that the cancer has come back

Most patients who have or may have a small intestine tumor will have one or more of these tests.

Barium x-ray tests
For these tests, a liquid containing barium (a chalky substance) is put into the body to coat the lining of the gastrointestinal (GI) tract, and then x-rays are taken. The barium helps outline any abnormal areas in the esophagus, stomach, and intestines, making them more visible. These x-rays are most often used to look for tumors in the upper or lower parts of the GI tract, but they are less helpful in finding small intestine tumors. Barium tests were used more often before endoscopy was available (see below).

- **Upper GI series**: For this test, you will be given a barium liquid to drink, and then x-rays are done to look at the upper part of the digestive tract (the esophagus, stomach, and first part of the small intestine). To look for problems in the rest of the small intestine, more x-rays can be taken over the next few hours as the barium passes through the intestines. This is called a **small bowel follow-through**. This test often gives good pictures of the first part of the small intestine (the duodenum), but the rest of the small intestine may be hard to see in detail.

- **Enteroclysis**: This test gives more detailed pictures of the small intestine than the upper GI series with small bowel follow-through. A thin tube is passed down the nose or mouth, through the stomach, and into the small intestine. Then barium is sent through the tube directly into the small intestine. X-rays are taken as the liquid moves through the small intestine.

- **Barium enema (lower GI series)**: This is a way to look at the large intestine (colon and rectum). Before this test, the bowel needs to be cleaned out. This is done by using strong laxatives and enemas the night before and the morning of the exam. For this test, the barium solution is given into the large intestine through a flexible tube that is put into the anus (like an enema). For better pictures, air can also be injected into the intestine through a tube. This is called *air contrast*. This procedure is meant to be used to look at the large intestine, but sometimes the last part of the small intestine can be seen as well.

**Computed tomography (CT) scan**

A **CT scan** uses x-rays to make detailed cross-sectional images of your body. Unlike a regular x-ray, a CT scan creates detailed images of the soft tissues in the body.

CT scans are often done if you have abdominal (belly) pain to try to find the source of the problem. Although small intestine tumors may not always be seen well on a CT, these scans are good at showing some of the problems that these tumors can cause (like an *obstruction* or *perforation*). CT scans can also help find areas of cancer spread.

**CT enteroclysis**: This test is sometimes used to get a better view of the intestine than a
standard CT can provide. Before the scan, a thin tube is passed down your nose or mouth and down to the small intestine. A large volume of a liquid contrast agent is then put into the tube, which helps expand the intestine and makes it easier to see on a CT scan.

**CT-guided needle biopsy:** CT scans can also be used to guide a biopsy needle precisely into an abnormal area that could be cancer spread. For this procedure, called a *CT-guided needle biopsy*, you will stay on the CT scanning table while the doctor moves a biopsy needle through the skin and toward the location of the mass/tumor. CT scans are repeated until the needle is within the mass. Smallsamples of tissue are then removed and looked at under a microscope.

**Magnetic resonance imaging (MRI)**

Like CT scans, MRI scans show detailed images of soft tissues in the body. But MRI scans use radio waves and strong magnets instead of x-rays.

MRI scans can sometimes be useful in people with suspected small intestine tumors, because they can show a lot of details in soft tissues. But a CT scan is often done instead, as it is typically an easier test to have done.

**MR enteroclysis:** This test is sometimes used to get a better view of the intestine than a standard MRI can provide. Before the scan, a thin tube is passed down the nose or mouth and down to the small intestine. A large volume of a liquid contrast agent is then put into the tube, which helps expand the intestine and makes it easier to see on an MRI.

**Endoscopy**

For an endoscopy, the doctor puts a flexible, lighted tube (endoscope) with a tiny video camera on the end into the body to see the inner lining of the GI tract. If abnormal areas are found, small pieces can be biopsied (removed) through the endoscope.

**Upper endoscopy**

Upper endoscopy (also called *esophagogastroduodenoscopy* or *EGD*) is used to look at the esophagus, stomach and duodenum (the first part of the small intestine). The endoscope is put in through the mouth, and then passes through the esophagus, into the stomach, and then into the first part of the small intestine. If the doctor sees any abnormal areas, small pieces of tissue can be removed to be looked at under a
microscope to see if cancer is present.

Most people having this test are given medicine to make them sleepy. If this is the case, you will usually need someone to take you home (not just a cab or rideshare service).

This test is helpful in looking at the first part of the small intestine. Other tests, such as capsule endoscopy and double-balloon enteroscopy, are needed to look at the rest of the small intestine.

**Capsule endoscopy**

This procedure does not actually use an endoscope. Instead, you will swallow a capsule (about the size of a large vitamin pill) that has a light and a very small camera. Like any other pill, the capsule goes through the stomach and into the small intestine. As it travels through the small intestine (usually over about 8 hours), it takes thousands of pictures. The camera sends the images to a device that you wear around the waist while going about your normal daily activities. The pictures can then be downloaded onto a computer, where the doctor can look at them as a video. The capsule passes out of the body during a normal bowel movement and is flushed away.

**Double-balloon enteroscopy (endoscopy)**

Most of the small intestine can't be viewed with an upper endoscopy because it is too long (about 20 feet) and has too many curves. Double-balloon enteroscopy gets around these problems by using a special endoscope that is made up of 2 tubes, one inside the other.

You are given intravenous (IV) medicine to help you relax, or even general anesthesia (so that you are asleep). The endoscope is then inserted either through the mouth or the anus, depending on if there is a specific part of the small intestine to be looked at.

Once in the small intestine, the inner tube, which is an endoscope, is pushed forward a small distance, and then a balloon at its end is inflated to anchor it. Then the outer tube is pushed forward to near the end of the inner tube and it is then anchored in place with a balloon. This process is repeated over and over, letting the doctor see the intestine a foot at a time.

This test can sometimes be helpful when done along with capsule endoscopy. An advantage of this test over capsule endoscopy is that the doctor can biopsy anything that looks abnormal.
Because you will be given medicine to make you sleepy for the procedure, usually someone you know will need to drive you home (not just a cab or rideshare service).

**Biopsy**

Procedures such as endoscopy and imaging tests can find areas that look like cancer, but the only way to know for certain is to do a biopsy. In a biopsy, a piece of the abnormal area is removed and looked at under a microscope.

There are different ways to take biopsy samples of an intestinal tumor.

- A biopsy can be done during an **endoscopy**. When a tumor is found, the doctor can use biopsy forceps (pincers or tongs) through the tube to take small samples of the tumor. The samples are very small, but doctors can usually make an accurate diagnosis. Bleeding after a biopsy is a rare but potentially serious problem. If bleeding becomes a problem, doctors can sometimes inject drugs that constrict blood vessels through the endoscope and into the tumor to stop the bleeding.
- For some patients, **surgery** is needed to biopsy a tumor in the intestines. This may be done if the tumor cannot be reached with an endoscope.
- Sometimes CT scans or other imaging tests are used to guide a thin, hollow **needle** to biopsy tumors in other organs (like the liver) to see if they are cancer.

**Lab tests of biopsy samples**

Doctors can usually tell if a biopsy sample contains cancer (adenocarcinoma) cells by looking at it under a microscope. But other tests might be done on the samples as well.

For example, the cancer cells might be tested for certain gene changes that could affect treatment options. Changes in mismatch repair (MMR) genes, or another genetic change known as microsatellite instability (MSI), make it more likely that the cancer might respond to treatment with immunotherapy drugs called **checkpoint inhibitors**.

- **References**


Cusack JC, Overman MJ. Diagnosis and staging of small bowel neoplasms. UpToDate.
Small Intestine Cancer (Adenocarcinoma) Stages

(Note: This information is about small intestine cancers called adenocarcinomas. To learn about other types of cancer that can start in the small intestine, see Gastrointestinal Carcinoid Tumors, Gastrointestinal Stromal Tumors, or Non-Hodgkin Lymphoma.)

After someone is diagnosed with small intestine cancer, doctors will try to figure out if it has spread, and if so, how far. This process is called staging. The stage of a cancer describes the extent of the cancer in the body. It helps determine how serious the cancer is and how best to treat it. Doctors also use a cancer's stage when talking about survival statistics.

The earliest stage small intestine cancers are called stage 0 (carcinoma in situ), and then range from stages I (1) through IV (4). As a rule, the lower the number, the less the cancer has spread. A higher number, such as stage IV, means cancer has spread more. Although each person's cancer experience is unique, cancers with similar stages tend to have a similar outlook and are often treated in much the same way.

How is the stage determined?

Small intestine cancers are typically given a clinical stage based on the results of any exams, biopsies, and imaging tests that might have been done. If surgery has been
done, the **pathologic stage** (also called the *surgical stage*) can also be determined.

Small intestine cancers typically start in the inner lining of the intestine. As they grow, they can spread into deeper layers. These layers include:

- **Mucosa**: This is the innermost layer. It has 3 parts: the top layer of cells (called the *epithelium*), a thin layer of connective tissue (called the *lamina propria*), and a thin layer of muscle (called the *muscularis mucosa*).
- **Submucosa**: This is the fibrous tissue that lies beneath the mucosa.
- **Thick muscle layers (muscularis propria)**: This layer of muscle contracts to force the food along the GI tract.
- **Subserosa and serosa**: These are the thin outermost layers of connective tissue that cover the GI tract. The serosa is also known as the *visceral peritoneum*.

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**The AJCC TNM staging system**

The staging system most often used for small intestine cancer is the American Joint...
Committee on Cancer (AJCC) **TNM** system, which is based on 3 key pieces of information:

- The extent (size) of the main **tumor (T)**: How far has the cancer grown into the layers of the wall of the small intestine? Has the cancer reached nearby structures or organs?
- The spread to nearby lymph **nodes (N)**: Has the cancer spread to nearby lymph nodes?
- The spread (**metastasis**) to distant sites (**M**): Has the cancer spread to distant parts of the body? The most common sites of spread are the liver and the inner lining of the abdomen (peritoneal cavity).

Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced.

Once the T, N, and M categories have been determined, this information is combined in a process called **stage grouping** to assign an overall stage. For more information see [Cancer Staging](#).

The system described below is the most recent AJCC system, effective January 2018. It is only used for staging adenocarcinoma of the small intestine.

Small intestine cancer staging can be complex. If you have any questions about the stage of your cancer or what it means, ask your doctor to explain it to you in a way you understand.

### Stages of small intestine adenocarcinoma

<table>
<thead>
<tr>
<th>AJCC Stage</th>
<th>Stage grouping</th>
<th>Stage description*</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Tis N0 M0</td>
<td>The cancer is only in the epithelium (the top layer of cells of the mucosa). It has not grown into the deeper tissue layers (Tis). It has not spread to nearby lymph nodes (N0) or distant parts of the body (M0).</td>
</tr>
<tr>
<td>I</td>
<td>T1 or T2 N0 M0</td>
<td>The cancer has grown into deeper layers (the lamina propria or the submucosa) (T1) OR it has grown through the submucosa into the muscularis propria (T2). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).</td>
</tr>
<tr>
<td>IIA</td>
<td>T3 N0</td>
<td>The cancer has grown through the muscularis propria and into the subserosa. It has not started to grow into any nearby organs or structures</td>
</tr>
</tbody>
</table>
### Staging for Small Intestine Cancer

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIA</td>
<td>Any T</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td>IIIB</td>
<td>Any T</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td>III</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
<tr>
<td>IIB</td>
<td>T4</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>I</td>
<td>T3</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>

(T3).  
The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).

(T4).  
The cancer has grown through the outer layer of tissue covering the intestine (the serosa or visceral peritoneum) or into nearby organs or structures (T4).  
The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).

The cancer might have grown into any layers of the wall of the small intestine (Any T).  
It has spread to 3 or more nearby lymph nodes (N2) but not to distant parts of the body (M0).

The cancer might have grown into any layers of the wall of the small intestine (Any T).  
It might or might not have spread to nearby lymph nodes (Any N).  
It has spread to distant lymph nodes or organs such as the liver or the peritoneum (the inner lining of the abdomen) (M1).

* The following additional categories are not listed on the table above:
  - TX: Main tumor cannot be assessed due to lack of information.
  - T0: No evidence of a main tumor.
  - NX: Nearby lymph nodes cannot be assessed due to lack of information.

**References**


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### Survival Rates for Small Intestine Cancer (Adenocarcinoma), by Stage

(Note: This information is about small intestine cancers called adenocarcinomas. To
Survival rates tell you what portion of people with the same type and stage of cancer are still alive a certain amount of time (usually 5 years) after they were diagnosed. They can’t tell you how long you will live, but they may help give you a better understanding about how likely it is that your treatment will be successful. Some people will want to know the survival rates for their cancer, and some people won’t. If you don’t want to know, you don’t have to.

**What is a 5-year survival rate?**

Statistics on the outlook for a certain type and stage of cancer are often given as 5-year survival rates. The 5-year survival rate is the percentage of people who live at least 5 years after being diagnosed with cancer. For example, a 5-year survival rate of 70% means that an estimated 70 out of 100 people who have that cancer are still alive 5 years after being diagnosed. Keep in mind, however, that many of these people live much longer than 5 years after diagnosis.

**Cancer survival rates don’t tell the whole story**

Survival rates are often based on previous outcomes of large numbers of people who had the disease, but they can’t predict what will happen in any particular person’s case. There are a number of limitations to remember:

- The numbers below are among the most current available. But to get 5-year survival rates, doctors have to look at people who were treated at least 5 years ago. As treatments are improving over time, people who are now being diagnosed with small intestine cancers may have a better outlook than these statistics show.
- These statistics are based on the stage of the cancer when it was first diagnosed. They do not apply to cancers that later come back or spread, for example.
- The outlook for people with small intestine cancers varies by the stage (extent) of the cancer – in general, the survival rates are higher for people with earlier stage cancers. But many other factors can affect a person’s outlook, such as age and overall health, where the cancer is in the intestine, and how well the cancer responds to treatment. The outlook for each person is specific to their circumstances.
Your doctor can tell you how these numbers may apply to you, as he or she is familiar with your particular situation.

**Survival rates for small intestine cancers**

The numbers below were published in 2017 in the 8th edition of the AJCC Staging Manual. They come from the National Cancer Data Base, and are based on people diagnosed with small intestine adenocarcinoma between 1998 and 2008.

<table>
<thead>
<tr>
<th>Stage</th>
<th>5-year survival rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>About 70%</td>
</tr>
<tr>
<td>Stage II</td>
<td>About 55%</td>
</tr>
<tr>
<td>Stage III</td>
<td>About 30%</td>
</tr>
<tr>
<td>Stage IV</td>
<td>About 5% to 10%</td>
</tr>
</tbody>
</table>

Remember, these survival rates are only estimates – they can’t predict what will happen to any individual person. We understand that these statistics can be confusing and may lead you to have more questions. Talk to your doctor to better understand your specific situation.

- **References**
  

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**Questions to Ask Your Doctor About Small Intestine Cancer**

It’s important to have honest, open discussions with your cancer care team. Ask any question, no matter how minor it might seem. For instance, consider these questions:

**When you’re told you have a small intestine cancer**
• What type of small intestine cancer do I have? How might this affect my treatment and outlook?
• Where is the cancer located?
• What is the stage (extent) of my cancer, and what does that mean for me?
• Will I need any other tests before we consider treatment options?
• Will I need to see any other types of doctors?
• If I’m concerned about costs and insurance coverage for my diagnosis and treatment, who can help me?

**When deciding on a treatment plan**

• How much experience do you have treating this type of cancer?
• What are my treatment options?
• What do you recommend and why?
• What is the goal of the treatment?
• Should I get a second opinion? How do I do that? Can you recommend someone?
• Based on what you’ve learned about my cancer, what is my outlook?
• How quickly do we need to decide on treatment?
• What should I do to be ready for treatment?
• How long will treatment last? What will it be like? Where will it be done?
• What risks or side effects are there to the treatments you suggest?
• Will treatment affect my daily activities?
• How likely is it that the cancer will come back after treatment? Is there anything I can do to lower this risk?

**During treatment**

Once treatment begins, you’ll need to know what to expect and what to look for. Not all of these questions may apply to you, but getting answers to the ones that do may be helpful.

• How will we know if the treatment is working?
• Is there anything I can do to help manage side effects?
• What symptoms or side effects should I tell you about right away?
• How can I reach you (or someone from your office) on nights, holidays, or weekends?
• Do I need to change what I eat during treatment?
• Are there any limits on what I can do?
• Should I exercise? What should I do, and how often?
• Can you suggest a mental health professional I can see if I start to feel overwhelmed, depressed, or distressed?

After treatment

• Are there any limits on what I can do?
• What symptoms should I watch for?
• What type of follow-up will I need after treatment?
• How will we know if the cancer has come back? What should I watch for?
• What will my options be if the cancer comes back?
• Where can I find more information and support?

Along with these sample questions, be sure to write down any others you want to ask. For instance, you might want information about recovery times so that you can plan your work or activity schedule. Or you might want to ask about clinical trials that might be right for you.

Keep in mind that doctors aren’t the only ones who can give you information. Other health care professionals, such as nurses and social workers, can answer some of your questions. To learn more about speaking with your health care team, see The Doctor-patient Relationship.

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