

# Pancreatitis

Working with you as a partner in health care, your gastroenterologist at GI Associates will determine the best diagnostic and treatment measures for your unique needs.

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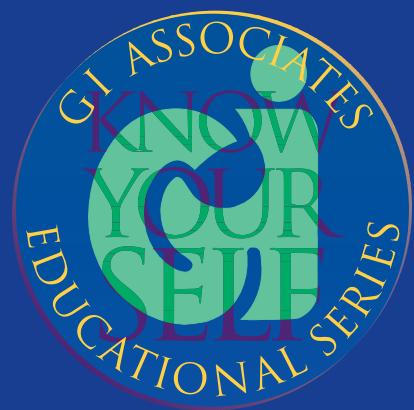
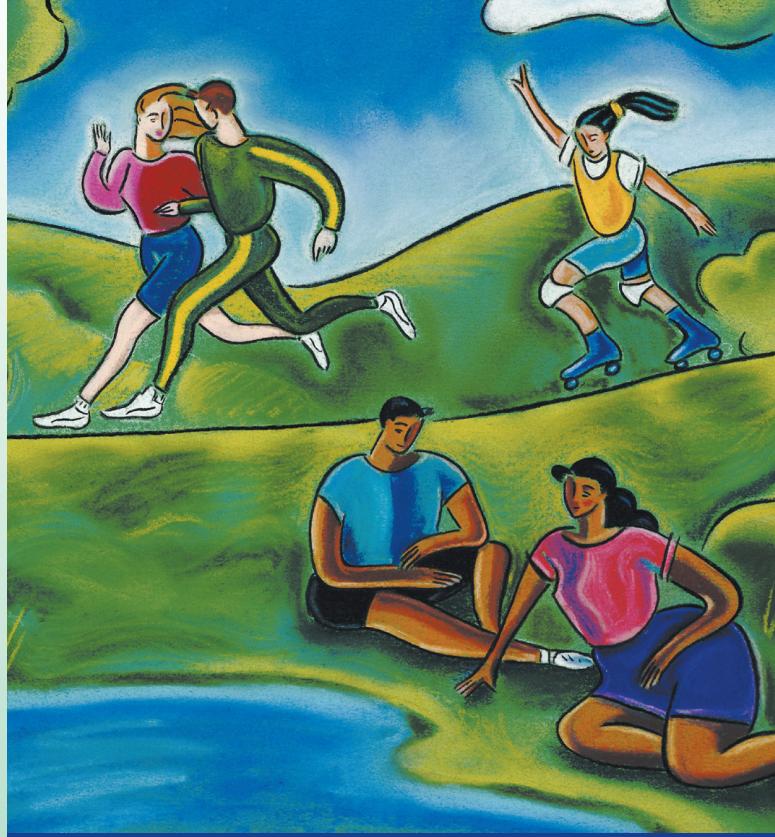
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# Table of Contents

1. What is the pancreas?
3. Pancreatitis (general)
4. Acute Pancreatitis
4. What causes it?
5. Signs & symptoms
7. How is it diagnosed?
8. How serious is it?
8. What is the treatment?
11. Chronic Pancreatitis
11. What are the symptoms?
12. How is it diagnosed?
13. How is it treated?
13. Summary
14. Cancer of the pancreas
14. What causes it?
15. Signs & symptoms
15. How is it diagnosed?
16. How serious is it?
16. What is the treatment?
16. Summary



## How serious is it?

Pancreatic cancer can be cured only when found at the very earliest stages. Unfortunately, the survival rate for pancreatic cancer is pretty dismal, because often by the time it is diagnosed, it has spread to other parts of the body.

**Early detection, before cancer has spread, is a must for the best treatment outcome!**

## What is the treatment for pancreatic cancer?

The treatment chosen for pancreatic cancer, as well as most other types of cancer, depends on the type of cancer, as well as the tumor size and extent of spread to other areas.

Treatment may involve *surgery* to remove the pancreas, provide for better drainage of fluids or to sever nerves that transmit pain. *Chemotherapy, radiation, and medication* to relieve pain are also often part of treatment.

## In summary...

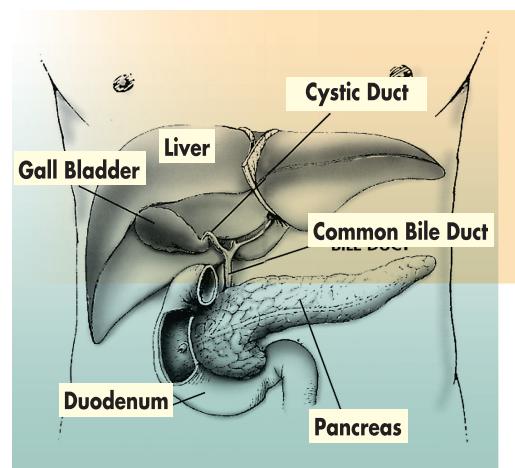
On a positive note, current evidence suggests that more persons than ever before are being successfully treated for pancreatic cancer. We are making progress! The need for early detection of pancreatic cancer underscores the necessity of early medical evaluation of symptoms so that treatment can be more effective.

With cancer of the pancreas (as with any other GI condition), our goal is to work with the patient to develop a plan of treatment that will allow the patient to live life to the fullest with the best possible relief of symptoms.

## What is the pancreas?

Even though we don't usually hear a lot about the pancreas, it is very important to good health. The pancreas not only helps to digest and use the food we eat, but it also affects the whole body. Learning about how the pancreas works *normally* can help you understand problems of the pancreas.

Your pancreas is a *gland*, which is an organ that makes secretions that are used in other parts of the body. It is thin and spongy, about six inches long, and weighs less than a pound. It is located behind



your stomach and is surrounded by the first loop of the small intestine. It lies across the upper part of the abdomen, with its head located on the right side and its narrow tail toward the left side of the body, under the diaphragm. Like a drainage system, the pancreas has many small openings (*ducts*) that feed into a large duct called the *Duct of Wirsung*, that runs the entire length of the pancreas. The *common bile duct* from the *liver* and *gall bladder* joins the *Duct of Wirsung* and then empties into the small intestine.

## The pancreas - two glands in one!

The pancreas acts like *two glands in one*. It acts as an *exocrine gland* by releasing substances to the *outside* of the pancreas through ducts. It acts as an *endocrine gland* by releasing substances directly into the bloodstream.



## What does it do?

The *exocrine gland* work of the pancreas (releasing substances to the outside of the pancreas) accounts for about 99% of its workload. The pancreas produces about 24 ounces of *pancreatic juices* (a collection of enzymes and hormones) daily and secretes them through its duct system into the small intestine.

The large amount of fluid moving through the pancreas daily could quickly become a painful problem if a blockage develops in its drainage (duct) system. Blockage can occur from a lodged gallstone or from the swelling that can happen if the pancreas becomes inflamed or infected.

The production and release of enzymes by the pancreas is controlled by hormones made in the small intestine. When we eat, food entering the small intestine causes the release of special hormones into the bloodstream. When those hormones reach the pancreas (through the bloodstream) the pancreas knows to produce and release large amounts of water, an alkaline substance (*sodium bicarbonate*) and *digestive enzymes* (*trypsin, amylase and lipase*). Those digestive enzymes are produced by cells in the pancreas that look like clusters of grapes and are called *acinar*

Research studies have shown that chronic alcoholism and chronic pancreatitis are associated with the development of pancreatic cancer. Additionally, long-term exposure to some chemicals, such as those involved in some occupations, may increase one's risk of pancreatic cancer (for example, chemicals used in dry cleaning and gas, coal or metal mining).

# The Silent Pancreatic Cancer... Killer

## Signs & symptoms

Unfortunately, the early symptoms of pancreatic cancer are much like those of other illnesses. It is called a "silent killer", because during early stages, symptoms may be few or completely absent. Usually there are few symptoms until the bile duct is obstructed. But when the bile duct becomes obstructed, it usually causes *jaundice* (a yellowish-green discoloration of the skin and white part of the eyes). Other symptoms of pancreatic cancer include abdominal pain that often radiates to the back and a rapid weight loss of 10% or more of body weight. Itchy skin (*pruritis*) may be experienced as well as *nausea, vomiting and intestinal bleeding*.

## How is it diagnosed?

Diagnosis is based on symptoms and diagnostic tests similar to those described in the preceding section about pancreatitis. There is consistent progress into areas of research that may be important to the outcome of pancreatic cancer in the future. The development of *tumor markers* (blood tests that search for evidence of a particular type of cancer) will help determine the presence of pancreatic cancer at earlier stages. Also, *human genome research* (to determine the genetic tendency for certain cancers) will probably improve our ability to better identify those that may be at higher than normal risk.

# Cancer of the pancreas

Cancer of the pancreas ranks 5th as the most common cause of death from cancer. Its occurrence has grown over the last fifty years. In most countries, including the U.S., it occurs about twice as often in men than women. African-Americans seem to develop pancreatic cancer more frequently than do other races. It is rare in persons under age 25 and is uncommon among those under 45. About 80% of cases occur in persons between 60 and 80 years of age.

**Cancer of the pancreas ranks 5th as the most common cause of death from cancer.**

## What causes it?

The cause of pancreatic cancer, like other cancers, is not entirely known, but we know that heavy smokers are twice as likely to develop pancreatic cancer. Risk increases with the number of cigarettes smoked per day. High fat diets combined with heavy alcohol use also seem to increase one's risk. Evidence is mounting that diets low in fat, high in fruits and vegetables, afford some protection against pancreatic cancer.



cells. Sodium bicarbonate works with the digestive enzymes to break down food into tiny units that can be absorbed for use by the body.

The *endocrine gland* work of the pancreas (releasing substances directly into the bloodstream) is done by special cells called the *islets of Langerhans*. They produce and release both *insulin* and *glucagon* into the bloodstream. These substances control the amount of sugar used and stored in the body. *Insulin* prompts cells throughout the body to remove and use the available sugar from the bloodstream. On the other hand, *glucagon* causes the release of *stored* sugar into the bloodstream to increase the blood sugar level. The delicate balance of these two hormones maintains the correct blood sugar level that is necessary for a healthy body and life itself.

## What can go wrong with the pancreas?

Infections, injury or tumors of the pancreas can disrupt the normal function of the pancreas. The two major problems of the pancreas that will be discussed on the following pages are *pancreatitis* (inflammation of the pancreas) and *pancreatic cancer*. Of the two, *pancreatitis* is the most common.

# Pancreatitis

## What is it?

Pancreatitis is an inflamed or infected pancreas. Damage to the pancreas itself happens when its own digestive enzymes attack the pancreas itself, a process called *autodigestion*. We do not completely understand what actually triggers this process. Those digestive enzymes usually work outside of the pancreas, in the intestine, to help digest food.

In addition to the pancreatic enzymes attacking the pancreas, the autodigestive process seems to stimulate other enzymes, which also start digesting the pancreas. In severe cases, bleeding, the development of cysts, serious tissue damage or death of tissue in the pancreas may occur. The enzymes and toxins released during that process may enter the bloodstream and cause serious damage to the kidneys, heart, lungs and other organs.

## Two types of Pancreatitis

There are two basic types of pancreatitis, *acute* and *chronic*. *Acute pancreatitis* develops suddenly, when the pancreas becomes inflamed. In some cases, however, patients continue to have attacks of varying degrees of severity. When pancreatitis becomes an off and on, long-term problem, it is known as *chronic pancreatitis*.

*Chronic pancreatitis* may develop after only one acute attack, especially when the ducts of the pancreas have been damaged. In the early stages, the doctor cannot always tell whether or not the patient has acute or chronic disease. The symptoms may be the same.

## Acute Pancreatitis

There are about 50,000 to 80,000 cases of acute pancreatitis in the United States each year. Many people recover fully from a mild case without medical treatment, but severe cases can be life-threatening with many complications.

## What causes acute pancreatitis?

The most common cause of acute pancreatitis is *alcohol abuse* or *gallstones* (that block ducts). Other less common causes include:

- Complication of abdominal surgery
- Injury to the pancreas (for example, as a result of an automobile accident)
- Side effect of some prescription drugs
- Birth defect of the pancreas or intestine
- Some infections, such as the mumps
- *Sphincter of Oddi Dysfunction* (an abnormality of the small sphincter muscle that releases pancreatic juice from the duct)



## How is Chronic Pancreatitis treated?

This can be a serious, life-threatening problem, but working together, the gastroenterologist and the patient can develop a treatment plan that will keep complications to a minimum and will allow the patient to live life as fully as possible.

Major goals of treatment are:

### Fewer and less severe attacks

Patients must stop drinking alcohol! For those patients that have trouble stopping alcohol use, additional help may be needed. Your gastroenterologist can refer you to someone who can help.

### Pain relief

Medication may be needed to control pain.

Surgery may be needed to control pain.

### Adequate nutrition/metabolism of food

A low fat diet may be recommended.

Dietary supplements to replace pancreatic enzymes, help nutrition and support weight gain.

Insulin or other drugs may be given to control blood sugar.

Stopping alcohol use, staying on the diet that has been prescribed and taking the proper medications are absolutely essential for the best possible outcome!

## In Summary....

Pancreatitis can be mild or severe, a one time problem or a life-long problem. Sound medical treatment and good self care are the keys to avoiding life-threatening complications. Working in partnership with your gastroenterologist, the best possible outcome can be achieved!

may be constant or off and on, mild or severe. In some advanced cases of chronic pancreatitis, pain may go away completely. This is thought to occur because of the damage to the pancreas. It no longer produces the pancreatic hormones that are responsible for causing the pain.



Patients with chronic pancreatitis often lose weight, even when their appetite and eating habits are normal. This happens because enzyme production in the pancreas is abnormal (food is not being broken down, so normal nutrient absorption cannot occur). Instead of being used by the body, fat, protein and sugar are lost and leave the body through the stool.

If the insulin-producing cells of the pancreas (islet cells) have been damaged, diabetes will develop and must be treated.

## How is Chronic Pancreatitis diagnosed?

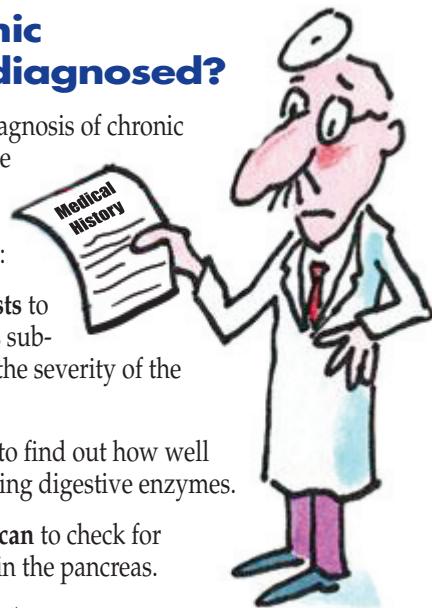
Like acute pancreatitis, diagnosis of chronic pancreatitis is based on the patient's history, symptoms, physical examination and tests that include:

**Blood, urine and stool tests** to check for levels of various substances and to determine the severity of the problem.

**Pancreatic function tests** to find out how well (or if) the pancreas is making digestive enzymes.

**X-ray, ultrasound or CT scan** to check for abnormalities or damage in the pancreas.

**ERCP** (explained on page 6).



We also know that the tendency to develop pancreatitis seems to be inherited in some cases and that there is an increased risk of pancreatitis in children with cystic fibrosis.

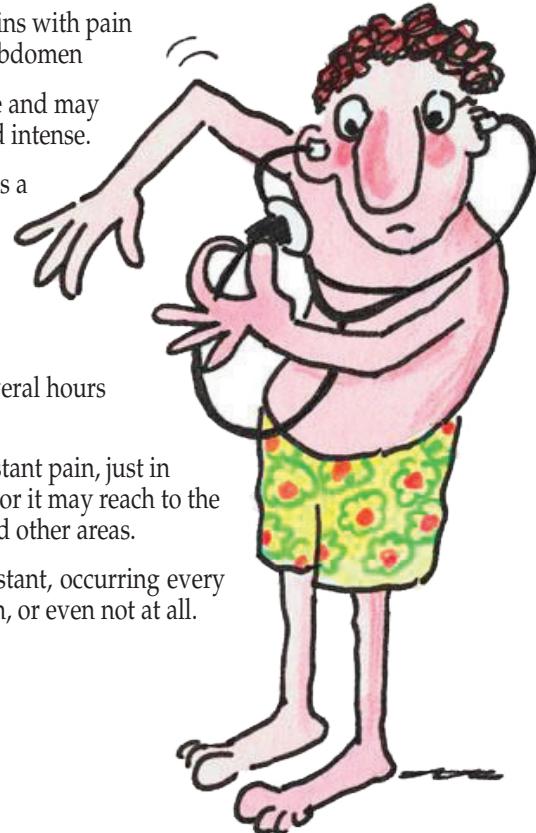
*In about 15% of cases, the cause of pancreatitis is simply unknown (idiopathic).*

## Signs & symptoms of acute pancreatitis

The symptoms of acute pancreatitis may be mild or severe and life-threatening. The symptoms listed below may or may not be present.

### Pain

- Usually begins with pain in the upper abdomen
- Often severe and may be sudden and intense.
- May begin as a mild pain aggravated by eating, then slowly grows worse.
- May last several hours or days.
- May be constant pain, just in the abdomen, or it may reach to the back, chest and other areas.
- May be constant, occurring every day, off and on, or even not at all.

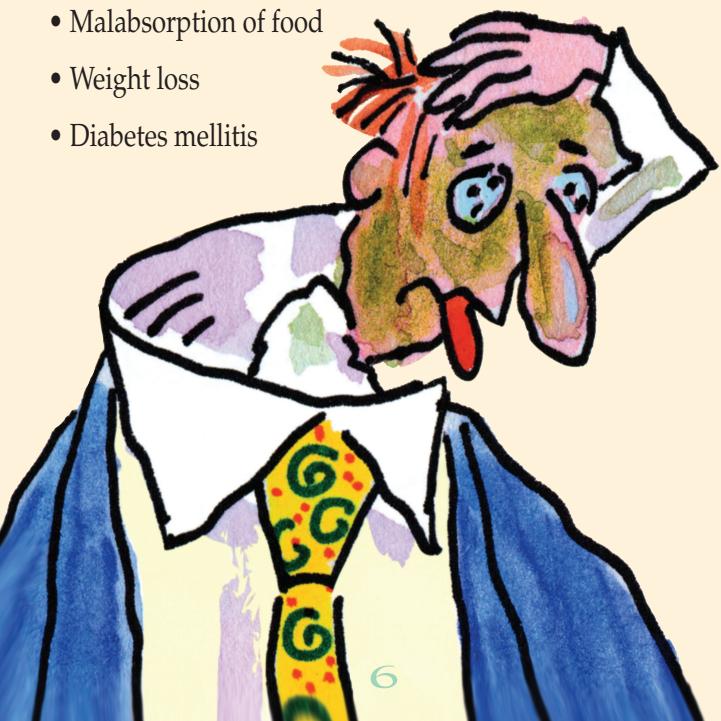


## Other symptoms

- Swelling and tenderness of the abdomen
- Nausea
- Vomiting
- Dehydration
- Fever
- Clammy skin (cool and moist to the touch)
- Low blood pressure
- Elevated pulse rate and/or high blood pressure
- Bulky and foul smelling stools
- Feeling and looking very sick
- Damage to the pancreas: scar tissue and calcifications or death of tissue

## Over time

- Malabsorption of food
- Weight loss
- Diabetes mellitus



## Chronic pancreatitis

Chronic pancreatitis is usually caused by many years of alcohol abuse. It is more common among men than women. It usually develops between the years of 30 and 40. Although chronic, excessive alcohol abuse (alcoholism) is usually the case, it may develop after years of moderate social drinking. Such drinking may cause no symptoms for many years, but then suddenly pancreatitis will occur. Pancreatitis may also be inherited. Much is still unknown about the inherited pancreatitis.



## What are the symptoms of chronic pancreatitis?

The symptoms of chronic pancreatitis are much the same as those for acute pancreatitis, listed on pages 4 and 5. However, unlike acute pancreatitis, from which a person may recover fully, patients who have chronic pancreatitis may have ongoing problems that must be addressed, primarily pain and malabsorption.

### Pain

For the patient with chronic pancreatitis, pain is usually an ongoing problem and must be dealt with. As mentioned earlier, the pain of pancreatitis may take on many different forms; it

## Surgery\*

- To remove gallstones, if they are present
- To remove or drain cysts
- To treat complications of pancreatitis
- To remove damaged tissue
- To deaden the nerves causing extreme pain

\*Sometimes, endoscopy can be used instead of surgery to treat some of these problems. If gallstones are causing the attack, surgery is usually needed to remove them. If the attack is mild, surgery may be done right away. But, sometimes the surgery must wait a week or even a month, until the patient gets better.

## Other

If diabetes develops because of damage to the pancreas, it must also be treated.

After a patient has recovered from an attack of acute pancreatitis, the gastroenterologist will work with the patient to prevent future attacks. Prevention depends on understanding the cause of the attack, which may require more testing. Then, it is usually a combination of medical treatment as well as life style changes that will help a patient avoid future attacks.



## How is acute pancreatitis diagnosed?

Pancreatitis is usually diagnosed by history, physical examination, symptoms and diagnostic tests.

Blood tests can measure changes in blood levels of the pancreatic enzymes *amylase* and *lipase*, as well as *calcium*, *magnesium*, *sodium*, *potassium*, *bicarbonate*, *sugar* and *lipids* (fat). When a patient recovers from pancreatitis, blood levels of these substances usually return to normal.

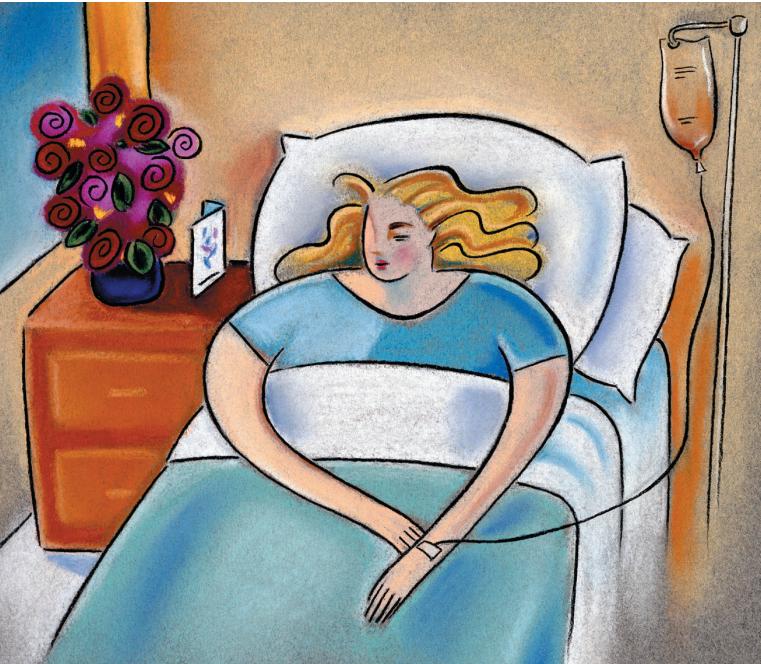
**History, physical examination, symptoms and diagnostic tests will help diagnose pancreatitis.**

X-ray, ultrasound, and CT scan may also be used to view the pancreas for inflammation, scarring and calcifications. An endoscopic procedure called ERCP (endoscopic retrograde cholangiopancreatography) is occasionally used to diagnose pancreatitis. ERCP involves the use of a slender endoscope (lighted flexible tube), which is inserted into the mouth and guided through the esophagus and stomach into the duodenum to the opening of the pancreatic and bile ducts. Through the endoscope, the gastroenterologist can search for problems by introducing a liquid that will cause the pancreas to be seen on x-ray. Biopsies (a sample of tissue taken for testing) can also be done through the endoscope.

## How serious is acute pancreatitis?

Usually, the patient recovers completely, but severe cases can lead to heart, lung and kidney failure. In rare cases, shock and death can occur.

If injury to the pancreas continues, such as when a patient keeps drinking alcohol, a chronic form of the disease may develop—severe pain and damage to the pancreas that causes reduced function which affects digestion and causes weight loss.



## What is the treatment for acute pancreatitis?

The treatment of pancreatitis depends on how bad the attack is. Usually, acute pancreatitis gets better on its own, so treatment is based on relieving symptoms. Even so, hospitalization may be necessary.

Resting the pancreas is an important part of the treatment of pancreatitis. For the pancreas, "rest" means being relieved of its duties of digesting food, so food may be withheld for a time. In some cases, the patient may need to avoid eating for several

days, so intravenous (IV) fluids are given for nutrition. If a patient has severe vomiting, a tube through the nose to the stomach may be inserted to remove fluid and air. An uncomplicated acute attack usually lasts only a few days. But if the attack is severe, IV fluids may be continued much longer to give the pancreas a chance to recover.

Treatment plans may also include:

## Medication

- To decrease the flow of pancreatic enzymes
- For pain control
- To combat infection
- To replace pancreatic enzymes

## Lifestyle changes

- No alcohol use
- Avoidance of large meals
- Following a low-fat diet

