



# Pancreatitis

The pancreas is a flat gland located behind the stomach. It has two main functions: producing digestive enzymes, and secreting hormones, such as insulin and glucagon, to regulate blood sugar levels. The pancreas releases digestive enzymes into the duodenum when it detects fats and proteins within the foods we consume. Specialized cells in the pancreas (islets) secrete glucagon and insulin into the bloodstream. Glucagon causes the liver to release glucose into the blood, and insulin causes cells to take up glucose from the blood.

Pancreatitis is a term that means inflammation of the pancreas. The two main types of pancreatitis are acute and chronic. Acute does not refer to disease severity; it means there is an abrupt onset of symptoms. Chronic means smouldering, long-standing disease that continues even after resolving the original trigger. It is a long-term condition characterized by scarring and irreversible destruction of pancreatic tissue. The main symptoms are pain, weight loss, and manifestations related to the loss of functional pancreatic tissue, such as diabetes or malabsorption.

In this booklet, we review acute and chronic pancreatitis separately, as there are distinct differences.

## Acute Pancreatitis

### Symptoms

The main symptoms of acute pancreatitis are nausea accompanied by pain in the upper abdomen or back. Symptoms of acute pancreatitis come on suddenly and can vary in severity from mild to life threatening. Mild cases typically resolve over the course of a week or so. Severe cases may include major complications such as infection, hemorrhage, failure of other organ systems such as lungs or kidneys, or fluid collections in the abdomen. Such fluid collections, called pseudocysts, often resolve spontaneously.

Large cysts that persist for more than six weeks usually need draining to prevent further problems such as infection or hemorrhage. Most individuals who develop acute pancreatitis recover completely.

### Potential Causes

The most common cause of acute pancreatitis in adults is gallstones. The gallbladder is a small sac-like organ located below the liver. Its primary function is to store and concentrate bile, an important digestive fluid made by the liver. When fat enters the upper portion of the small intestine (duodenum), bile flows from the liver through bile ducts to the duodenum. When the small intestine is empty, bile flows back into the gallbladder for storage. Bile consists of water, cholesterol, fats, bile salts (also called bile acids), and a yellow pigment product known as bilirubin.

Gallstones (cholelithiasis) are the most common gallbladder disorder, and affect about one-fifth of men and one-third of women at some point throughout life. Stones form when cholesterol and other elements of the bile are abnormally concentrated or they are in disproportion. Three types of gallstones exist:

Pigment stones, comprised primarily of bilirubin, are more common in some populations and parts of the world than in others and occur most frequently among persons who have types of anemia characterized by rapid destruction of red blood cells (autoimmune hemolytic anemia).

Mixed stones, the most widespread type of stone, develop from crystalline particles of cholesterol mixed with other bile substances. Sometimes people refer to mixed stones as cholesterol stones, since they are comprised mostly of cholesterol.

The third type of stone, comprised of pure cholesterol, is rare. Alcohol abuse is the second most common cause of acute

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pancreatitis and, unlike gallstones, this can lead to chronic pancreatitis. Some patients may have more than one attack of pancreatitis but usually recover fully after each one.

Less common causes include viral infection (mumps, *coxsackie B*), trauma, manipulation of the pancreas at the time of surgery, elevated blood triglyceride levels, congenital structural abnormalities of the pancreas or intestine, and some medications (e.g., estrogen, azathioprine, corticosteroids, thiazide diuretics, tetracycline).

Endoscopic retrograde cholangiopancreatography (ERCP) is a medical procedure used to diagnose and treat conditions of the bile ducts. During this procedure, a physician passes a scope through the mouth to examine the liver, gallbladder, bile ducts, and pancreas. Unfortunately, the procedure itself may sometimes lead to acute pancreatitis.

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

Damage to the pancreas may occur during auto-digestion, when digestive enzymes normally secreted into the small intestine for food digestion activate inappropriately within the pancreas and begin attacking that organ. There may be bleeding into the gland causing swelling, serious tissue damage, infection, and cysts. When the disease is more serious, enzymes and toxins may enter the bloodstream and significantly injure other organs, such as the heart, lungs, and kidneys. Intense, painful symptoms may last for 48 hours. About 20% of cases are severe.

## Diagnosis

On physical examination, the abdomen is tender. During acute attacks, blood tests reveal high levels of the digestive enzyme amylase. A computed tomography (CT) scan or ultrasound of the abdomen may show evidence of swelling or damage to the pancreas, or fluid collections around the pancreas.

## Management

Individuals with acute pancreatitis often have significant pain and vomiting, and generally require admission to hospital for supportive care with intravenous fluids, electrolytes, and analgesics. Fasting is the best approach to prevent further stimulation and irritation of the pancreas. During this time, your doctor will monitor tests to determine the cause of the pancreatitis and to treat any complications that arise.

In most cases, symptoms subside after 4-7 days, at which point it is usually safe to resume oral food intake and leave the hospital. Those with very severe pancreatitis may require treatment in an intensive care unit and may even need urgent surgery to deal with complications such as a pancreatic abscess. If the pancreatitis is due to gallstones, then a surgeon might remove the gallbladder once the pancreatitis has subsided, to prevent future recurrences.

## Outlook – Acute Pancreatitis

In most cases there is little you can do in terms of prevention. However, to avert some types of acute pancreatitis, you should avoid excessive amounts of alcohol, and if you have diabetes or hyperlipidemia, then it's important to follow the prescribed treatment plan for your condition.

## Chronic Pancreatitis

### Potential Causes

Alcohol abuse is the cause of about 75% of all cases of chronic pancreatitis. Less common causes include hereditary pancreatitis or pancreatic duct obstruction. However, in a significant proportion of cases of chronic pancreatitis, physicians are unable to identify a cause. A key feature of chronic pancreatitis is that there is always irreversible scarring of the duct and of the functioning glandular tissue in the pancreas. Ultimately, this damage results in an inability to digest food properly, due to a lack of pancreatic enzymes (pancreatic insufficiency). This also affects insulin production, potentially leading to diabetes. For more information, ask for our pamphlet on *Pancreatic Exocrine Insufficiency*.

### Symptoms

The primary ongoing symptom of chronic pancreatitis is pain localized to the upper abdomen that often radiates to the back. Episodes of pain last from hours to days and may eventually become continuous. Eating may worsen the pain. Individuals who develop pancreatic insufficiency might develop loose, foul-smelling stools and lose weight. Chronic pancreatitis patients might undergo numerous disturbances to their lifestyle and health, including hospitalization, unemployment, disrupted social life, weight loss, anxiety, depression, and narcotic dependency (if using narcotics for pain).

### Diagnosis

Typically, there is a previous history of acute pancreatitis before a diagnosis of chronic pancreatitis. There could be signs of malnutrition and weight loss. An abdominal CT scan or ultrasound may reveal inflammation and/or calcification of the pancreas. Amylase levels may be increased, but this test is less reliable with chronic pancreatitis than with acute pancreatitis. A number of specialized tests are available to assess pancreatic function and enzyme secretion.

### Management

Treatment of the various symptoms and complications of chronic pancreatitis addresses the two main issues of pain and pancreatic insufficiency.

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## Pain

If there is a clearly identified cause of the chronic pancreatitis, then correcting it is the first step. Those with a history of excess alcohol use must completely stop consuming it. Unfortunately, this may not lead to resolution of symptoms, but often slows further disease progression.

Some evidence exists supporting the use of high-dose pancreatic enzymes to help control pain attributed to chronic pancreatitis. By taking pancreatic enzymes, the level of hormonal stimulation of pancreatic enzyme secretion decreases, potentially leading to improved pain control.

Taking analgesics or narcotics will help for pain relief. However, due to the chronic nature of the pain, taking narcotics continuously could lead to dependency or addiction. Other strategies to control pain may include interventions such as nerve blocks or pancreatic duct drainage. Referral to a chronic pain specialist can also be helpful in identifying treatment options other than narcotics for pain control. In very rare cases of intractable pain not helped by these measures, surgery might be necessary.

## Pancreatic Insufficiency

A low-fat diet supplemented with fat-soluble vitamins (A, D, E, & K) and calcium helps reduce diarrhea and improve nutrient intake. Enzyme replacement therapy (Cotazym®, Creon®, Ultrase®) is often necessary to ensure adequate digestion. Not all these formulations are equally efficacious. Individuals who develop diabetes from chronic pancreatitis will usually require insulin treatment.

## Outlook – Chronic Pancreatitis

Complications that can arise from chronic pancreatitis include narcotic addiction (if used for pain management), obstruction of the common bile duct, pancreatic insufficiency, and diabetes mellitus. As with other chronic illnesses, those who have chronic pancreatitis might experience a sense of helplessness. Knowing more about pancreatitis could relieve this concern and provide some proactive steps to take toward managing the disease. It is important to recognize that this disorder often requires a multidisciplinary management approach involving healthcare practitioners such as the family physician, gastroenterologist, surgeon, internist, psychiatrist, counsellor, dietitian, and pain specialist.

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