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## **Pancreatitis in children**

*Patient and family information, brought to you by the Education Committee of APSA*

### **Overview - “What is it?”**

The pancreas is a gland located in the abdomen surrounded by the stomach, small intestine, liver, spleen, and gallbladder. The pancreas aids in two bodily functions—digestion and blood sugar regulation.

The pancreatic duct is a tube that runs the length of the pancreas and carries pancreatic enzymes and other secretions made by the pancreas, often called “pancreatic juice”. This pancreatic duct connects with the common bile duct, which carries bile from the gallbladder. These two ducts drain bile and pancreatic juice to into the small intestine, where these substances aid with the breakdown of food. The hormones that regulate blood sugar (insulin and glucagon) are released into the blood stream rather than the intestine.

**Definition:** Pancreatitis is a disease in which the pancreas becomes inflamed. Pancreatic damage occurs when enzymes in the pancreatic juice are activated before they are released into the small intestine and begin attacking the pancreas. Acute pancreatitis is a sudden inflammation that ranges from mild to severe. It can be life threatening.

**Acute pancreatitis** is an illness which most children recover completely with appropriate treatment. In severe cases, acute pancreatitis can result in bleeding into the gland, infection, and cyst formation. Patients with severe acute pancreatitis may also suffer problems in other organs such as the kidneys, lungs, and heart. Common causes of acute pancreatitis in children include injury (such as handlebar injuries from a bicycle), gallstones which lodge in the opening of the pancreatic duct, certain medications (some anti-seizure medications, or drugs used to treat cancer) or congenital problems of how ducts of the pancreas formed during fetal development.

**Chronic pancreatitis** is a slow, progressive illness of the pancreas in which the ability of the pancreas to produce pancreatic juices and the sugar controlling hormones becomes altered. Children at risk for chronic pancreatitis are those with specific genetic, metabolic, or anatomic abnormalities.

## Signs and Symptoms - “What symptoms will my child have?”

Common symptoms of pancreatitis include abdominal and back pain, nausea, and vomiting. These symptoms are not limited to pancreatitis and can easily be confused with signs of another disease. Patients with chronic pancreatitis may experience weight loss, diarrhea and oily bowel movements, poor growth, and diabetes.

## Diagnosis - “What tests are done to find out what my child has?”

There is no single test to diagnose pancreatitis. The rapid onset of upper mid-abdominal pain with nausea and vomiting may prompt your doctor to obtain blood tests to see if there is evidence of pancreatitis.

**Blood Tests** for substances that the pancreas makes (amylase and lipase) is used most commonly. When the pancreas is injured or inflamed, the blood levels of these pancreatic enzymes can rise above normal. If these blood tests are abnormal, an **ultrasound or CT** scans are commonly obtained to look for evidence of pancreatitis. However, all of these tests may be falsely normal in the setting of pancreatitis, and repeated vigilance on the behalf of the medical team may be required to ultimately make the diagnosis.

Blood tests may be used to determine if the pancreatitis is improving, and imaging such as another CT scan or an MRI may be used if there is suspicion of ongoing damage to the pancreas, development of a cyst (called a pseudocyst), or to try and determine if abnormal anatomy of the pancreatic duct system is the cause of the pancreatitis.

## Treatment - “What will be done to make my child better?”

Acute pancreatitis typically resolves within 2-7 days with appropriate intravenous fluid, pain control and nutritional support.

**Nutritional Support:** In the past, patients were prevented from eating to allow the pancreas to rest (“bowel rest”), but today your doctor will decide what is safe—either limited oral intake, using nutrition delivered through a special tube placed through the nose (a nasojunal tube), or nutrition given through the vein in severe cases.

In cases of severe vomiting, the stomach may need to be suctioned to empty it out. This is done through a tube inserted through the nose with the end in the stomach. If the stomach is empty, then the vomiting usually stops, making the child more comfortable. Supporting other organ systems is important and may require admission to the intensive care unit so that the lungs, kidneys and heart can be supported with modern medical interventions when necessary.

**Surgery:** A surgeon may be involved in caring for your child as there is always a small chance that an operation or procedure may be necessary, but this is uncommon to treat the pancreas itself. However, in some cases, surgery may be necessary to treat the cause of the pancreatitis. For instance, when pancreatitis occurs as the result of gallstones, removal of the gallbladder is often recommended once the pancreatitis has resolved. This is typically done with an operation called a **laparoscopic cholecystectomy** in which the gallbladder is removed using small incisions. In patients with pancreatitis from trauma, a pediatric surgeon will likely care for your child to determine if surgery is necessary to remove a part of the damaged pancreas. Also, a surgeon may be helpful in cases where complications happen as the result of severe pancreatitis such as a pancreatic cyst or bleeding.

**The treatment of chronic pancreatitis** largely depends on the cause. If there is problem with the anatomy of the duct system that drains the pancreas, then a procedure may be needed. This is often performed by endoscopy whereby a scope is inserted into the mouth that reaches the pancreatic duct opening in the intestine (endoscopy) under anesthesia. Surgery may be required if this is unsuccessful or is unavailable.

Patients who have lost the ability to digest food will be prescribed pills containing pancreatic enzymes and special vitamins to aid in digestion. There is no clear evidence that a special diet is required for chronic pancreatitis, however many doctors will advise low-fat diet and more frequent, smaller meals. Currently, there are no effective medical treatments for patients with a genetic predisposition, however, some patients are candidates for a newer operation called **pancreatectomy with islet cell autotransplantation** that is offered in some specialized medical centers. In this procedure, the surgeon removes the pancreas and the hormone-producing cells known as 'islets' are isolated and returned to the patient, usually by injecting them into the liver.

**Informed consent:** A consent form is a legal document that states the tests, treatments, or procedures that your child may need and the doctor or practitioner that will perform them. Before surgery, your doctor should tell you what the operation is, the goal of the surgery and other possible treatment options that are available. Your doctor should explain the risks and benefits of the surgery. You give your permission when you sign the consent form. You can have someone sign this form for you if you are not able to sign it. You have the right to understand your child's medical care in words you know. Before you sign the consent form, make sure all of your questions are answered. It is important to know that during surgery, there are things that can happen that your doctor may have not predicted before going in. He or she will explain these to you after the surgery.

## Home Care - “What do I need to do once my child goes home?”

**Diet:** Your child may have some changes in what they can eat depending on the severity of the pancreatitis. This will be specified by your doctor team.

**Activity:** There are typically no significant activity restrictions unless your child undergoes surgery. Specific activity restrictions will be given if your child has surgery.

**Wound care:** This will depend on the type of procedure your child had, if any. The doctor will give you specifics.

**Medicines:** Your child may be given medications for pain control and/or for their pancreas function. Your doctor team will provide you with specific prescriptions.

**What to call the doctor for:** Call your doctor for worsening belly pain, fever, vomiting, diarrhea, problems with urination, or if any wounds are red or draining fluid.

**Follow-up care:** Your child will follow-up with the surgeon typically within 2-3 weeks from discharge after a surgery. Your child may also need to see a pediatric gastroenterologist.

## Long Term Outcomes - “Are there future conditions to worry about?”

When the symptoms are mild and the patient is able to drink enough liquids and be comfortable with oral pain medication, your child may not need to be treated in the hospital. When your child is hospitalized, even though symptoms of acute pancreatitis may last for a few days, it does not mean that your child needs to stay in the hospital that entire time. Your doctor team will guide you through the plans of going home.

The complications of acute pancreatitis depend on how bad the inflammation was. The most common complication is the collection of fluid around the pancreas, which, in many cases, will resolve with time. If the pockets of fluid become infected or get really big, then a procedure may be necessary. This may include drainage of infected fluid or surgery.

Death from acute pancreatitis is quite rare in children. Pancreatitis can recur in 10% of patients and patients who have recurrent episodes will likely benefit from further testing to determine the underlying cause.

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