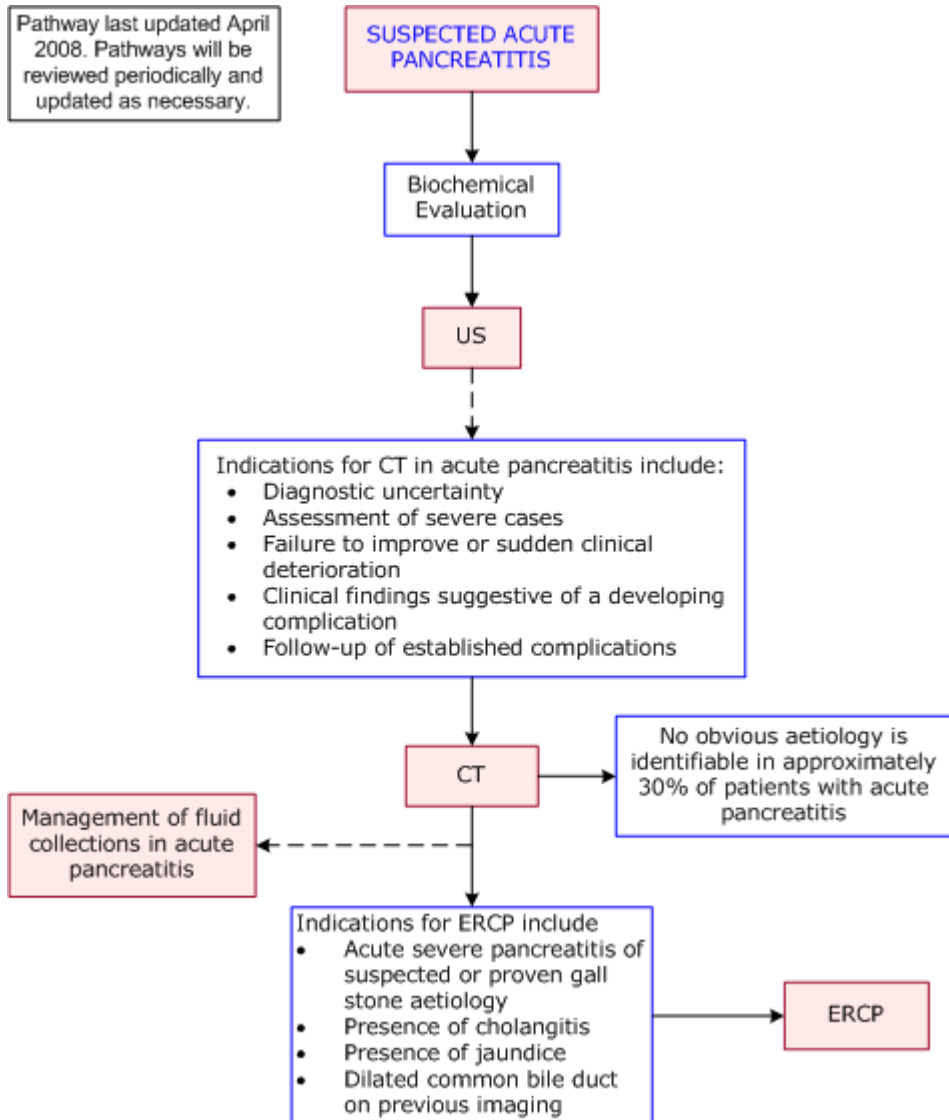




DIAGNOSTIC IMAGING PATHWAYS

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ACUTE PANCREATITIS

- The diagnosis of pancreatitis is usually made clinically and biochemically. [1](#)
- In suspected acute pancreatitis, imaging is used to: [1](#)
 1. Exclude an underlying cause (eg gallstones)
 2. Assess severity
 3. Detect complications

ULTRASOUND

- Recommended to help determine the aetiology in all patients with suspected acute pancreatitis. [1,3](#)
- Primarily used to assess the biliary tree for gallstones, duct dilatation/obstruction and to exclude other pathology. [1,3](#)
- Helps distinguish fluid collections from solid inflammatory masses.
- Useful for follow-up of pancreatic fluid collections if seen well on initial ultrasound. [4](#)
- Limitations:
 - Visualisation of the pancreas is usually sub-optimal due to overlying bowel gas from a coexistent ileus. [5,6](#)
 - Detection of intra-parenchymal and retroperitoneal fluid collections correlates poorly with pancreatic necrosis. [3](#)
 - Often underestimates the presence, extent and complexity of fluid collections.

COMPUTED TOMOGRAPHY

- Contrast enhanced CT is the imaging modality of choice for evaluating the pancreas and the surrounding tissues. [3,7](#)
- Routine CT is not indicated in mild acute pancreatitis unless there are clinical or other signs of deterioration [1,7,8, 21](#) nor is there any advantage to performing early imaging to predict the clinical severity of acute pancreatitis rather than clinical evaluation. [21](#)
- 14-28% CT scans are normal in mild pancreatitis. [7,8](#)
- Indications for CT scan include: [1,3,8](#)
 1. Diagnostic uncertainty
 2. Assessment of severe cases
 3. Failure to improve on treatment
 4. Clinical findings suggesting a developing complication (eg fever, pain, hypotension, decreasing haematocrit)
 5. Sudden deterioration in clinical status following an initial response to medical treatment
 6. Follow-up and monitoring of established complications
 7. Guidance of interventional procedures such as percutaneous fine needle aspiration and/or catheter drainage of fluid collections.
- Combination of pre and post-contrast enhancement appearances permits the assessment of the degree of pancreatic necrosis and surrounding peri-pancreatic pancreatic necrosis and surrounding peri-pancreatic and intra-abdominal fluid collections. The severity of disease as demonstrated on CT (CT severity index) correlates with the risk of morbidity and mortality. [9](#)
- Disadvantages: exposure to ionising radiation with repeat scanning.

ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP)

- Mainly used to locate and remove gallstones in the common bile duct among patients with severe pancreatitis attributable to gallstones. [1](#)
- Other indications for ERCP in the setting of acute pancreatitis include: [1](#)
 - Presence of ascending cholangitis.
 - Presence of jaundice.
 - Dilated common bile duct on previous imaging.
- Urgent ERCP and sphincterotomy is indicated in patients with severe gallstone pancreatitis who fail to respond to treatment within 48 hours. [10,11](#)
- Similarly patients with gallstone acute pancreatitis who develop ascending cholangitis stand to benefit from early ERCP and endoscopic sphincterotomy. [12](#)

FLUID COLLECTIONS IN ACUTE PANCREATITIS

- The question of intervention (usually percutaneous aspiration/drainage) for relatively symptomatic pseudocysts/fluid collections is a balance between on the one hand, the risks of introducing infection into a sterile collection and draining an "immature" cyst and on the other hand, the complications of a large untreated, unresolved fluid collection.
- Fluid collections in acute pancreatitis can be categorised into the following:
 1. Acute fluid collections
 - May be intra- or peri-pancreatic in location.
 - Present in 30-50% of cases of acute pancreatitis. [13](#)
 - Appears poorly marginated without a capsule.
 - Around 10-20% of fluid collections formed early in the disease process persist for 4 to 6 weeks and develop into a pseudocyst. [14](#)
 - Fine needle aspiration (FNA) is only indicated to exclude infection.
 2. Pancreatic pseudocysts [14](#)
 - A pancreatic pseudocyst consists of enzyme-rich fluid surrounded by a wall of granulation or fibrous tissue.
 - May be localised to the pancreas or located remotely. Communication with the pancreatic ductal system is present in up to 80% of cases.
 - Spontaneous regression occurs in 30-50% of cases and most pseudocysts less than 4cm in diameter resolve within 6 weeks.
 - Asymptomatic intrapancreatic pseudocysts less than 4-5 cm in diameter may be monitored.
 - Drainage is indicated for pseudocysts larger than 5cm, which are growing, symptomatic or complicated.
 - Drainage may be indicated for pseudocysts less than 4-5 cm in diameter that persist for more than 2 months.

3. Pancreatic necrosis
 - FNA is useful to distinguish between infected and sterile necrosis, with a sensitivity of 88-96% and specificity of 90-96%. [15,16](#)
 - Indications for FNA include: failure to improve within 48-72 hours of commencing medical therapy, persistent symptoms for more than 7 days with greater than 30% necrosis or clinical suspicion of sepsis with less than 30% necrosis.
 - Surgical management is usually preferred for cases of infected necrosis but there are advocates for percutaneous management.
4. Pancreatic abscess
 - May result from infected pseudocysts or infected late-acute fluid collections.
- Indications for aspiration/drainage include: [17-20](#)
 1. Diagnosis of possible infection/abscess. If aspiration confirms infection, possible therapeutic options are dependent on the morphology of the collection and the clinical status of the patient. They include;
 - Percutaneous catheter drainage either as a definitive procedure or as a "holding" measure pending surgery.
 - Surgical drainage/debridement as a first-line treatment.
 - Endoscopic drainage via the stomach or duodenum.
 2. Continuing symptoms considered due to the mass effect of the fluid collection.
 3. Cyst enlarging on serial follow-up imaging. In this situation ERCP may be useful. If communication between the pancreatic duct and the fluid collection is demonstrated, the need for prolonged drainage is likely and surgery may be a better option.
 4. Some authorities suggest size alone as a criterion for drainage (usually around 5 cm).

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Website

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