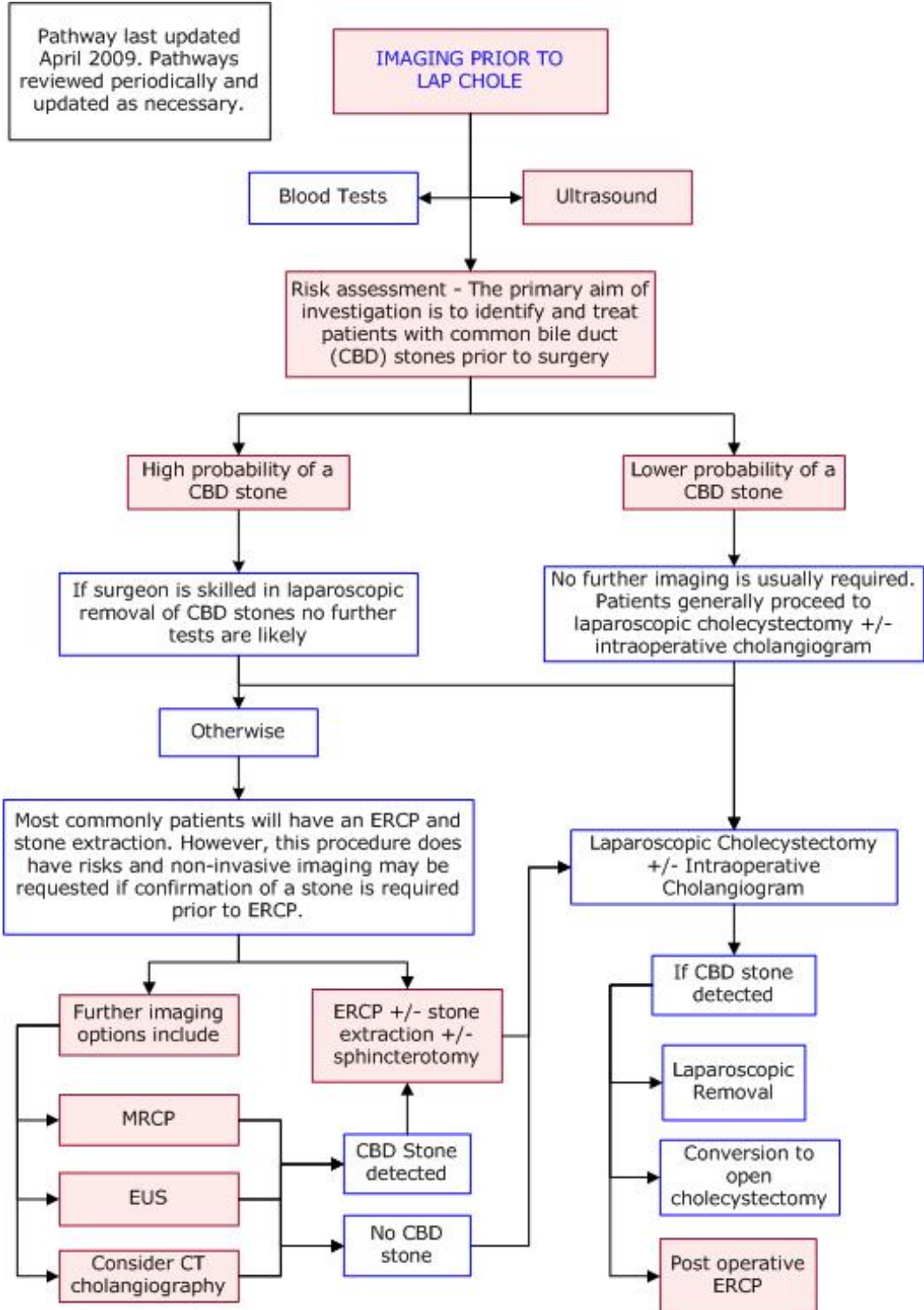




DIAGNOSTIC IMAGING PATHWAYS

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RISK ASSESSMENT FOR COMMON BILE DUCT STONES

- The presence of Common Bile Duct stones can be predicted with moderate accuracy by combining clinical, biochemical and ultrasound features. [1,2](#)

HIGH RISK OF CBD STONES

- Patients with the following clinical, biochemical, or sonographic features are considered at high risk of having a CBD stone:
 - Cholestatic jaundice.
 - Abnormal liver function tests.
 - Abnormal CBD on US (ie. dilated ducts, CBD stones)
 - Current episode of pancreatitis.

LOW RISK OF CBD STONES

- Patients with the following clinical, biochemical, or sonographic features are considered at low risk of having a CBD stone:
 - Normal liver function tests.
 - Normal CBD on ultrasound.
 - Previously abnormal LFTs and past history of pancreatitis remains low risk.

ULTRASOUND

- Has a sensitivity of 36-75% and specificity of 83-97% for the diagnosis of CBD stones. [5,8,16-17,29-30](#)
- Limitations: [8](#)
 - False negative results due to inability to see the extra-hepatic biliary tree (often because of interposed bowel gas) and absence of biliary dilation in the presence of obstruction.
- Advantages:
 - Non-invasive and readily available.
 - No ionising radiation

ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP)

- Routine use of ERCP to detect common bile duct stones before laparoscopic cholecystectomy is not indicated in low risk groups. [3,9,11](#)
- ERCP is indicated before laparoscopic cholecystectomy in patients in whom there is high clinical suspicion of choledocholithiasis, based on clinical, biochemical and ultrasonographic criteria. [3,10-13](#)
- Highly accurate in diagnosis and treatment of common bile duct stones (96% success rate for endoscopic sphincterotomy). [3,10-12,14](#)
- Limitations: up to 5% complication rate (eg pancreatitis), ~0.5-1% mortality rate and ~8% cannulation failure rate. [11-13,15](#)

ENDOSCOPIC ULTRASOUND

- Highly accurate (>95%) for the detection of choledocholithiasis (comparable to ERCP but superior to CT and US). [3,4,6,7,18-21,32](#)
- No significant difference in diagnostic accuracy compared to MRCP. [32](#) Consider patient suitability, availability and local expertise in selecting appropriate modality. [33](#)
- Comparable sensitivity to that of ERCP for detection of choledocholithiasis. [18,19](#)
- Can be used to detect common bile duct stones in intermediate risk group who are good surgical candidates. [3,18,22](#)
- Not suitable in: [19](#)
 - Severe acute biliary pancreatitis or cholangitis, since it may delay endoscopic treatment.
 - In elderly and high-risk surgical patients because in this population the treatment of choice is endoscopic sphincterotomy if CBD stones are detected.
- Limitations:
 - Limited availability
 - Invasive
 - Technically impossible in cases of previous gastric surgery
 - Difficult to interpret following sphincterotomy or previous biliary stenting procedures due to presence of air in the biliary tract
 - Does not offer therapeutic opportunity

MAGNETIC RESONANCE CHOLANGIOPANCREATOGRAPHY (MRCP)

- Sensitivity of over 84% and specificity of over 90% for the diagnosis of CBD stones, with most false negative results being for stones less than 5mm in diameter. [21,23-25,31,32](#)
- A meta-analysis of 7 studies showed no statistically significant difference in diagnostic accuracy between MRCP and EUS for the detection of CBD stones. [32](#) Consider patient suitability, availability and local expertise in selecting appropriate modality. [33](#)
- Advantages:
 - Non-invasive.
 - No ionising radiation.
 - Allows diagnosis and treatment planning without invasive cholangiography.
- Limitations:
 - Does not offer therapeutic opportunity.
 - Expensive and limited availability.
 - Less sensitive for stones smaller than 5mm in diameter. [31](#)

COMPUTED TOMOGRAPHY CHOLANGIOGRAPHY

- >90% sensitivity and specificity for detection of bile duct stones. [25-27](#)
- Alternative for detection of CBD stones in intermediate risk group, if MRCP or EUS unavailable. [25-27](#)
- Used by some surgeons, to evaluate aberrant bile ducts before laparoscopic cholecystectomy. [28](#)
- Disadvantages:
 - Unsuccessful if bilirubin levels are more than twice the upper limit of normal.
 - Potential risk of contrast toxicity.
 - Radiation exposure.
 - Does not offer therapeutic opportunity.

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Website

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