Authors' objectives
To evaluate the diagnostic and therapeutic effectiveness of endoscopic retrograde cholangiopancreatography (ERCP) for common bile duct stones, pancreaticobiliary malignancy, pancreatitis and abdominal pain of possible pancreaticobiliary origin. This abstract will concentrate on the therapeutic effectiveness; a separate abstract addresses the diagnostic performance (DARE abstract number 12005008411).

Searching
MEDLINE, BIOSIS Previews, EMBASE and SciSearch were searched from 1980 to August 2001; the search terms were reported. The bibliographies of key articles were checked, and the technical advisory group were contacted for further studies. Studies published in English as full-text articles in peer-reviewed journals, or abstracts published since 1999, were included in the review.

Study selection
Study designs of evaluations included in the review
Prospective studies, or retrospective studies where patients were enrolled consecutively with appropriate sampling methods, were eligible for inclusion. The studies had to enrol at least 25 participants in each treatment arm for studies of patients with common bile duct stones and pancreatitis, and a total of 25 patients for studies of patients with malignancy and abdominal pain. The studies had to either be of a parallel design or have populations that were comparable at baseline.

Specific interventions included in the review
Studies of ERCP compared with at least one other therapeutic option were eligible for inclusion. Relevant alternatives were surgical procedures for stones and malignancy, and medical management of pancreatitis or associated conditions.

Participants included in the review
Studies of patients with common bile duct stones, pancreaticobiliary malignancy, pancreatitis and abdominal pain of possible pancreaticobiliary origin were eligible for inclusion.

Outcomes assessed in the review
The studies had to report at least one relevant outcome measure to be included in the review. The primary outcomes included technical success (removal of stone or obstruction etc.), clinical success (survival, quality of life, relief of symptoms etc.), resource utilisation (hospitalisation, return to work etc.) and procedure-related morbidity.

How were decisions on the relevance of primary studies made?
One reviewer screened studies for relevance, with a second reviewer checking those where inclusion was deemed uncertain; any disagreements were resolved by consensus or through discussion with the Program Director or members of the Technical Advisory Group.

Assessment of study quality
Study quality was assessed in relation to comparability at baseline, methods of randomisation and allocation concealment, consideration of confounding factors, withdrawals and loss to follow-up, comparable performance of intervention and measurement of outcomes, the use of an intention-to-treat analysis where appropriate, and consideration of all important outcomes. The studies were rated as good, fair or poor. The authors did not state how many reviewers performed the validity assessment.

Data extraction
One reviewer extracted the data from the primary studies and a second reviewer checked the accuracy of the data. Any disagreements were resolved by consensus or by consultation with members of the Technical Advisory Group. The data appeared to have been reported as in the original primary studies.

**Methods of synthesis**

*How were the studies combined?*

The studies were combined in a narrative, ordered by diagnosis.

*How were differences between studies investigated?*

Study details and results were tabulated, and differences between the studies were discussed in the text.

**Results of the review**

A total of 149 studies met the inclusion criteria; the total number of studies that evaluated therapeutic effectiveness was unclear.

Overall, the body of literature was rated as fair quality. Where reported, approximately 35% of studies were good quality, 25% fair and 40% poor.

Common bile duct stones (14 studies).

Laparoscopic common bile duct exploration may be better than ERCP for managing cholecystectomy patients with the least resource use (3 good-quality randomised controlled trials, RCTs). One good-quality RCT and one fair-quality prospective study reported that surgery prevented long-term complications with acceptable short-term morbidity, compared with sphincterotomy alone, in high-risk patients. One good-quality RCT and one poor-quality retrospective study reported that endoscopic treatment of acute cholangitis reduced short-term mortality in comparison with emergency surgery. There was limited evidence to suggest that intracorporeal and extracorporeal lithotripsy gave similar outcomes when removing large common bile duct stones (one good-quality RCT and one fair-quality retrospective study); balloon dilation and sphincterotomy gave similar stone removal rates and short-term complications (two good-quality RCTs), as did needle-knife fistulotomy and precut papillotomy (one good-quality RCT); and duct stone clearance and endoscopic sphincterotomy were more effective than biliary endoprosthetic placement for the prevention of long-term complications in patients considered a high surgical risk (one good-quality RCT).

Pancreaticobiliary malignancy (28 studies).

Two good-quality and one fair-quality RCT and two poor-quality retrospective case series (n=470) reported no difference in patient survival between ERCP stenting and surgical bypass. However, the rate of complications seemed higher with surgery.

Two fair-quality RCTs and one poor-quality retrospective study (n=371) reported that both metal and plastic stents gave high rates of relief from jaundice and had similar complication rates. However, metal stents seemed to have a longer duration of patency.

There was insufficient evidence to evaluate stents made from other materials, different calibres, or stents with or without side holes (9 studies).

Two good-quality and one fair-quality RCT and two retrospective studies (n=477) reported that efficacy and complication rates were better with endoscopically placed stents compared with percutaneous placement.

Six generally poor-quality studies (n=782) failed to demonstrate that pre-operative stenting improved health outcomes; pre-operative stenting seemed to be associated with more complications than surgery alone.

Pancreatitis (7 studies).

Three RCTs (two good-quality and one fair-quality) suggested that early ERCP reduced complications in patients with
acute pancreatitis, and improved symptoms in patients with biliary obstruction, compared with delayed or selective ERCP. Delayed ERCP may be beneficial in patients with a low likelihood of biliary obstruction, as they may avoid the procedure and suffer fewer complications.

ERCP seemed to reduce emergency room visits and hospitalisation in patients with pancreas divisum and acute recurrent pancreatitis (one fair-quality RCT and two poor-quality retrospective studies). ERCP also seemed to have similar results to surgery for the drainage of pseudocysts (one poor-quality retrospective study).

Abdominal pain of possible pancreaticobiliary origin (7 studies).

Two good-quality RCTs and five observational studies generally showed that endoscopic sphincterotomy provided effective relief of pain in patients with pancreaticobiliary pain, sphincter of Oddi dysfunction, and elevated basal sphincter of Oddi pressure of greater than 40 mmHg on manometry. There was insufficient evidence to evaluate endoscopic sphincterotomy in patients with normal manometry findings.

Authors' conclusions
Surgical bypass and ERCP stenting had similar outcomes in patients with biliary obstruction of malignancy, but surgery had a higher rate of complications. Endoscopic sphincterotomy seemed to relieve pain in patients with pancreaticobiliary pain and abnormal manometry findings. Evidence regarding the treatment of common bile duct stones and chronic pancreatitis is lacking.

CRD commentary
The review question was clear with well-defined inclusion criteria. Several relevant sources were searched; however, both publication and language bias may be an issue due to the restriction to English language, peer-reviewed articles. The selection of studies, primarily by a single reviewer, may have led to selection bias and missed studies. The data extraction was conducted in duplicate, but it was unclear whether the same method was used to reduce error and bias during the quality assessment. The decision to combine the studies in a narrative was appropriate, and the results were presented clearly. The conclusions follow the evidence presented, however, the quality of several of the included studies was poor.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that the evaluation of treatments for chronic or recurrent pancreatitis is a research priority, which should be designed to address appropriate research questions in a rigorous fashion. Studies of interventions to reduce complications of ERCP should adopt prospective designs.

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http://www.ahrq.gov/clinic/epcsums/ercpsum.htm

Other publications of related interest

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**Record Status**
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.