Fluid therapy in acute pancreatitis: anybody's guess
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CRD summary
The review concluded that fluid therapy is considered a cornerstone of the early management of patients with acute pancreatitis and yet the evidence on which it is based remains paltry and of poor quality. These conclusions are likely to be reliable.

Authors' objectives
To evaluate the effectiveness of fluid therapy for acute pancreatitis.

Searching
MEDLINE, EMBASE and The Cochrane Library were searched from 1990. There were no language restrictions. Search terms were reported but the most recent search dates were not. Reference lists of relevant publications were searched.

Study selection
Randomised or observational studies of fluid therapy in patients with acute pancreatitis were eligible for the review.

Normal saline, hydroxyethyl starch, Ringer's lactate and dextrose treatments were evaluated most frequently in the included studies. The outcomes studied varied; more than half of the studies reported on mortality. Very few population details were reported but the authors stated that six studies were of patients with severe acute pancreatitis and nine studies were of patients with a range of severities.

Two authors selected studies. Disagreements were resolved by a third reviewer.

Assessment of study quality
The quality of evidence was evaluated by two authors independently using GRADE. Disagreements were resolved by a third reviewer.

Data extraction
Data were extracted in order to calculate relative risks with 95% confidence intervals. Studies that specified rapid resuscitation were classed as aggressive fluid therapy. Studies that specified controlled resuscitation were classified as non-aggressive fluid therapy. Interventions were classed as being goal-directed or non-goal-directed.

The authors did not state how many reviewers extracted data.

Methods of synthesis
Relative risks were pooled. No further method details were provided.

Results of the review
Fifteen studies were included (1,722 patients): four RCTs (randomised controlled trials, 272 patients), three prospective cohort studies (343 patients), four retrospective cohort studies (563 patients), one prospective case-control study (129 patients) and three case series (415 patients).

Type of fluid: One RCT (41 patients) found that Ringer lactate with hydroxyethyl starch significantly reduced intra-abdominal pressure on days two to seven when compared with Ringer lactate alone. Another RCT (40 patients) reported significant reductions from baseline in systemic inflammation in patients who received Ringer lactate but no such reduction in the normal saline comparison group (between-group comparisons were not presented). Neither study reported statistically significant differences between groups for organ failure, length of hospital stay and mortality.

Non-aggressive versus aggressive fluid resuscitation: There was moderate-quality evidence that non-aggressive fluid therapy resulted in lower organ dysfunction (RR 0.69, 95% CI 0.54 to 0.88; one RCT) and lower mortality (RR 0.40,
95% CI 0.22 to 0.72; two RCTs) compared with aggressive fluid resuscitation. The quality of the evidence relating to the other reported outcomes was mostly very low.

The evidence for goal-directed fluid therapy was sparse with low numbers of events.

**Authors' conclusions**

Fluid therapy is considered a cornerstone of the early management of patients with acute pancreatitis and yet the evidence on which it is based remains paltry and of poor quality.

**CRD commentary**

The review addressed a clear question and was supported by broad but reproducible eligibility criteria. Attempts to identify all relevant studies in any language were undertaken by searching electronic databases and checking references. Duplicate processes were employed to reduce the risks of reviewer error (process details were not reported for data extraction).

GRADE was used to evaluate the quality of the evidence but only basic primary study details were reported. No method details were provided about how data were pooled but the authors noted when clinical heterogeneity was evident.

Despite some reporting limitations the authors' conclusions appear to be reliable and to fairly represent the limited evidence-base available.

**Implications of the review for practice and research**

**Practice:** The authors commented that there was a lack of quality evidence to guide the most basic aspects of fluid therapy in patients with acute pancreatitis.

**Research:** The authors stated that high-quality randomised data were needed to answer the urgent basic clinical management questions of what fluid to give, at what rate and how best to guide successful fluid therapy delivery in acute pancreatitis.

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