Does gastric lavage really push poisons beyond the pylorus: a systematic review of the evidence
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CRD summary
This review examined whether gastric lavage drives poisons into the small bowel. The authors concluded that there was no evidence to support this idea. Only two relevant studies were identified, thus the evidence was very limited.

Authors' objectives
To determine whether gastric lavage drives poisons into the small bowel.

Searching
MEDLINE, PREMEDLINE, EMBASE and the Cochrane Library were searched to January 2003. The World Wide Web was also searched using stated search terms, and the first 500 identified websites were examined.

Study selection
Study designs of evaluations included in the review
Studies of any type of design were eligible. The review included a study that randomised two out of three treatment arms, and an observational study that compared the results of active treatment with control treatment in the same group of volunteers.

Specific interventions included in the review
The inclusion criteria were not specified in terms of interventions, but it was clear that studies of gastric lavage or gastric emptying were eligible. The included studies achieved gastric emptying with gastric lavage (using 300 to 360 mL aliquots of water) or ipecacuanha-induced forced emesis.

Participants included in the review
The inclusion criteria were not specified in terms of participants, but it was clear that studies in patients who had taken an overdose or simulated overdose were eligible. The included studies involved patients who presented to an emergency department after self-poisoning, or volunteers.

Outcomes assessed in the review
The inclusion criteria were not specified in terms of outcomes, but it was clear that studies that assessed the propulsion of poison into the small bowel were eligible. The included studies assessed propulsion into the small bowel using swallowed radio-opaque polythene pellets (fate followed using radiography) or radio-labelled tap water (fate followed by radioisotope camera).

How were decisions on the relevance of primary studies made?
One of two authors read each identified abstract and selected the studies.

Assessment of study quality
Validity was not formally assessed, but some aspects of validity were discussed in the text: potential confounding factors, appropriateness of statistical analysis and reporting of the method of randomisation.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.
The reviewers extracted the mean, median and range of time from pellet ingestion till radiograph for each treatment group; the mean and median number and percentage of pellets recovered with gastric emptying; and the mean and median number and percentage of pellets in the small bowel. The difference in the median number of pellets in the small bowel between gastric emptying and control, and between gastric lavage and control, were presented together with 95% confidence intervals (CIs). It was not stated whether the reviewers extracted or calculated these data.

**Methods of synthesis**

**How were the studies combined?**

A narrative synthesis of the studies was undertaken.

**How were differences between studies investigated?**

Differences between the studies were described in the text of the review.

**Results of the review**

Two studies were included. There were one controlled study in which two of the three treatment groups were randomised (40 patients randomised and 20 patients as controls) and one observational study (5 volunteers).

One study randomised 40 patients to gastric emptying using either gastric lavage or ipecacuanha-forced emesis and used a control comprising 20 patients who were considered not to require gastric emptying. The study showed no significant difference in the median number of pellets in the small bowel between gastric emptying and control (median 0.0, 95% CI: -2.0, 1.0) or between gastric lavage and control (median 0.0, 95% CI: -3.0, 1.0).

The authors of the review pointed out that results in this study might have been confounded by the different timing of radiography after the ingestion of radio-opaque pellets (median 30.0 minutes with gastric lavage versus 45.0 minutes with forced emesis versus 40.0 minutes with control), and by treatment and control groups with differing characteristics at baseline. Other methodological flaws included the lack of a description of the method of randomisation, no sample size calculation, and an inappropriate statistical analysis was used in the original report.

In the other small study, five volunteers were subjected to gastric lavage on three occasions using three different methods (no details were reported). The results were compared with no gastric lavage. The study found that all three methods of gastric lavage reduced radioactivity in the small bowel compared with control: after 30 minutes, the amount of radioactivity present was 2 to 11% with gastric lavage versus 38% with control.

**Authors’ conclusions**

There was no evidence that gastric lavage drives poison into the small bowel.

**CRD commentary**

The review question was clear in terms of the intervention, participants and outcomes, although no inclusion criteria were explicitly stated. Four relevant sources were searched and the search terms were stated. It was not stated whether any language restrictions were applied. Only one reviewer selected each study, and this lack of duplication might have led to errors and bias. The methods used to assess validity and extract data were not described, so it is not known whether any efforts were made to reduce errors and bias. Validity was not formally assessed, but some methodological limitations of the studies were discussed in the text.

A narrative synthesis was appropriate given that only two studies were identified. The authors’ discussion of the methodological problems in the identified studies validates their conclusion regarding the lack of evidence.

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

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that reliable evidence about the benefits and harms of gastric lavage can only come from a...
large randomised controlled trial.

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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.