Authors' objectives
To evaluate the effect of proton pump inhibitors (PPI) on recurrent bleeding in hospitalised patients with endoscopically documented bleeding peptic ulcers.

Searching
The authors searched the MEDLINE and EMBASE electronic databases (1992 onwards) and their own personal files for relevant studies.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) ranging in treatment duration from 3 to 5 days.

Specific interventions included in the review
Proton pump inhibitors (PPIs) (omeprazole (either 80 mg bolus, then 40 mg IV every 8 hours for 24 hours then 40 mg orally every 12 hours, or 80 mg bolus then 40 mg IV every 12 hours or every 8 hours, or 40 mg bolus then 6.7 mg/hour IV, or 40 mg orally every 12 hours)) for the intervention group and placebo or ranitidine (50 mg IV every 4 hours or 6 hours) or cimetidine (50 mg/hour IV) in the control groups.

Participants included in the review
Hospitalised patients with endoscopically documented bleeding peptic ulcers.

Outcomes assessed in the review
Incidence of rebleeding for the categories of spurting, oozing, non-bleeding visible vessel (NBVV), clot, and all categories.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the authors performed the selection.

Assessment of study quality
No formal assessment of quality was undertaken.

Data extraction
The authors do not state who, or how many of the authors, performed the data extraction.

Data were extracted for the categories of study identification, year of publication, design of study, number of participants, number of patients (and %) with specific signs of recent haemorrhage (SRH), therapeutic interventions (control or omeprazole) and duration of trial medication.

The authors contacted the authors of the primary studies in which rebleeding had not been noted according to specific individual SRH.

Methods of synthesis
How were the studies combined?
The studies were discussed in a narrative review with the results of each trial presented in a table and the outcomes
How were differences between studies investigated?
No tests for homogeneity are reported, however the authors state that the patients enrolled in the trials were heterogeneous because of variances in endoscopic SRH and different baseline risks of rebleeding.

Trials were grouped into those with no endoscopic therapy (3 trials) and with endoscopic therapy (2 trials).

Results of the review
Five RCTs were included in the review (2 double-blind with 723 participants, and 3 not blinded with 237 participants).

For the 3 studies without endoscopic therapy, the rebleeding rate in the control groups ranged from 27% to 39%. Omeprazole was associated with a statistically significantly lower risk of rebleeding compared with placebo in 1 trial (9% versus 35%). There was a trend toward lower rebleeding rates with omeprazole compared with ranitidine in the second trial (21% versus 39%), and no difference between omeprazole and placebo groups in the third trial (24% versus 27%). For the 2 studies with endoscopic therapy, control rebleeding rates were 24%. Rebleeding rates were similar whether patients were given omeprazole or ranitidine in 1 trial. The second trial in this group found a statistically significant lower rebleeding rate in patients treated with omeprazole compared with cimetidine in the second trial (4% versus 24%, p = 0.004).

Authors’ conclusions
While the results obtained in 1 population of patients with bleeding ulcers might not be reproduced in a physiologically different patient population (eg baseline levels of gastric acid secretion may differ between Asian and North American populations), the authors believe a PPI should be used in the treatment of bleeding peptic ulcer, especially in lesions with a clot or NBVV.

CRD commentary
The authors have clearly stated their research question but not their inclusion and exclusion criteria. The literature search is poor and does not report details about the search strategy. It is possible that the authors may have missed additional relevant studies. The quality of the included studies was not formally assessed and the authors have not reported on how the articles were selected, or how many of the reviewers were involved in the data selection and extraction.

The data extraction is reported in tables and text and the narrative synthesis was appropriate because of the heterogeneity between the included studies. There were no formal tests for heterogeneity but the authors have discussed some methodological and data limitations of the review.

The authors’ conclusions appear to follow from the results but should be viewed with caution because of the limitations of the review.

Implications of the review for practice and research
Practice: The authors state that in North America where an intravenous PPI form is not yet available, they recommend a high-dose oral regimen similar to that used in the Indian study.

Research: The authors did not state any implications for further research.

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