**Meta-analysis: comparing the efficacy of proton pump inhibitors in short-term use**

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**Study Type:** Meta-analysis

**Purpose:** This meta-analysis evaluated the comparative efficacy of proton pump inhibitors (PPI’s) for the short-term management (4 weeks) of GERD, peptic ulcer disease or eradication of H. pylori.

**Patients:** ~9000 patients; 41 trials identified, 19 trials used for GERD, treatment lasted 4 weeks

**Medications:** comparative trials with various doses of the following medications: omeprazole, pantoprazole, lansoprazole, rabeprazole, esomeprazole

**Meta-analysis design:** Studies were identified through Medline, EMBASE, and Cochrane from 1985 to 2002. Publication bias is a potential as not all languages were assessed and only full-text articles were selected.

**Inclusion:** randomized prospective trials, double-blinded, comparative studies treating GERD, peptic ulcer disease or h.pylori eradication were included, studies should confirm GERD by endoscopy, H.pyli by endoscopy or urea breath test

**Exclusion:** abstracts and poster presentations, pharmacokinetic studies, studies with specific groups (children, elderly)

1. Is the meta-analysis valid?
   Primary Guides
   a. Did the overview address a focused clinical question? yes
   b. Were the criteria used to select articles for inclusion appropriate? yes

   Secondary Guides
   a. Is it unlikely that important, relevant studies were missed? no
   b. Was the validity of the included studies appraised? yes
   c. Were the assessments of studies reproducible? yes
   d. Were the results similar from study to study? yes

2. What were the results?
   GERD (16 trials)
   • Multiple comparisons of omeprazole versus other PPI’s at varying doses showed no difference in endoscopic healing for GERD.
   • Only one trial showed a clinical difference and that was esomeprazole 40 mg versus omeprazole 20 mg (80% vs 67% response rate, p = 0.04, NNT = 7). But the dose comparison in this trial is misleading. When equal-potent doses are used, there is no significant advantage in endoscopic healing (n = 1306, esomeprazole 20 mg vs omeprazole 20 mg, p = NS).

   H. pylori eradication (16 trials)
   • There was no significant difference in h.pylori eradication between multiple comparisons of PPI’s.

   Peptic Ulcer Disease (9 trials)
   • When comparing different PPI’s for PUD healing, there was only one study that found a difference in healing rates over 4 weeks. Pantoprazole 40 mg was superior to omeprazole 20 mg (3 pooled trials).
   • All other comparisons were not significant for superior efficacy.

3. Will the results help me?
   • Funnel plot was not done.
   • It is not surprising that 40 mg of esomeprazole was superior to 20 mg of omeprazole. Esomeprazole is an enantiomer of omeprazole and is subject to less hepatic metabolism, therefore, there is more drug available for efficacy. A better comparison might be 40 mg of esomeprazole to 40 mg of omeprazole.

**Conclusion:** There does not seem to be a difference in efficacy between PPI’s at comparative doses for the treatment of GERD and eradication of h. pylori. Pantoprazole is better than omeprazole for treatment of peptic ulcer disease in a pooled analysis of 3 trials. No other comparisons met statistical significance. Based on these data, it is reasonable to pick a PPI based on pharmacoeconomic considerations (i.e., the best price), rather than efficacy.