# Global eradication rates for Helicobacter pylori infection: systematic review and meta-analysis of sequential therapy

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## Abstract

**Objective** To do a systematic review and meta-analysis of studies comparing sequential therapy for eradication of *Helicobacter pylori* with pre-existing and new therapies, thus providing a glimpse of eradication success worldwide.

**Design** Systematic review and meta-analysis.

**Data sources** Medline, Embase, and Cochrane Central Register of Controlled Trials up to May 2013; abstract books of major European, American, and Asian gastroenterological meetings.

**Study selection** Randomised controlled trials in previously untreated adults, in which sequential therapy was compared with a pre-existing or new therapy.

**Results** 46 randomised controlled trials were reviewed and analysed. 5666 patients were randomised to sequential therapy and 7866 to other (established and new) treatments. The overall eradication rate of sequential therapy was 84.3% (95% confidence interval 82.1% to 86.4%). Sequential therapy was superior to seven day triple therapy (relative risk 1.21, 95% confidence interval 1.17 to 1.25; $I^2$=29.3%; number needed to treat 6 , 95% confidence interval 5% to 7%), marginally superior to 10 day triple therapy (1.11, 1.04 to 1.19; $I^2$= 67.2%; NNT 10, 7 to 15), but not superior to 14 day triple therapy (1.00, 0.94 to 1.06; $I^2$=54.3%), bismuth based therapy (1.01, 0.95 to 1.06; $I^2$=21.1%), and non-bismuth based therapy (0.99, 0.94 to 1.05; $I^2$=52.3%). Data on eradication according to pre-treatment antimicrobial susceptibility testing were available in eight studies, and sequential therapy was able to eradicate 72.8% (61.6% to 82.8%) of the strains resistant to clarithromycin.

**Conclusions** Eradication rates with pre-existing and new therapies for *H pylori* are suboptimal. Regional monitoring of resistance rates should help to guide treatment, and new agents for treatment need to be developed.