

Eradication of *Helicobacter pylori* infection in adult: is sequential therapy the treatment of choice? A Systematic Review and Meta-analysis

L. Gatta^{1,2}, D. Vaira³, C. Scarpignato²

¹Gastroenterology and Digestive Endoscopy Unit, Versilia Hospital, Lido di Camaiore, Italy

²Dept. of Clinical & Experimental Medicine, University of Parma, Italy

³Dept. of Medical and Surgical Sciences, University of Bologna, Italy

Background: The increasing prevalence of antimicrobial resistant strains of *H. pylori* has markedly reduced the eradication rate of the current regimens. There has been worldwide interest in sequential therapy, a new regimen administering antimicrobials in a given sequence rather than all simultaneously. We performed a systematic review and meta-analysis of studies comparing sequential therapy to pre-existing and new therapies, thus providing a glimpse of eradication success worldwide.

Methods: We searched Medline, Embase, the Cochrane Central Register of Controlled Trials up to May 2013, and abstract books of the major European, American and Asian gastroenterological meetings for RCTs in adults, never treated before, where sequential therapy was compared to a pre-existing or new therapies. Two reviewers independently abstracted data and appraised risk of bias.

Findings: 46 RCTs were reviewed and analysed: 5666 patients were randomized to sequential therapy and 7868 to other (established and new) treatments. The overall eradication rate of sequential therapy was of 84.3% (95% CI: 82.1 to 86.4). Sequential was superior to 7-day triple therapy (Relative Risks, RR 1.21; 95% CI: 1.17 to 1.25; I^2 : 20.2%), marginally superior to 10-day triple therapy (RR: 1.11; 95% CI: 1.04 to 1.19; I^2 : 67%), but not superior to 14-day triple therapy (RR: 1.00; 95% CI: 0.94 to 1.06; I^2 : 54.3%), bismuth- (RR: 1.01; 95% CI: 0.95 to 1.06; I^2 : 21.1%) and non bismuth-based therapies (RR: 1.00; 95% CI: 0.95 to 1.05; I^2 : 32.4%). Data on eradication according to pre-treatment anti-microbial susceptibility testing were available in seven studies, and sequential therapy able to eradicate 72.8% (95%CI: 61.6 to 82.8) of the strains resistant to clarithromycin.

Interpretation: Eradication rates with pre-existing and new therapies for *H. pylori* are currently sub-optimal. Regional monitoring of resistance rates should help guide therapy, while new agents for treatment need to be developed.