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This series is coordinated by Corey D. Fogleman, MD, Assistant Medical Editor.

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Optimal Duration of Treatment Regimens for *H. pylori* Eradication

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Clinical Question

A patient with peptic ulcer disease is diagnosed with *Helicobacter pylori* infection by stool antigen test. What is the optimal duration of treatment to ensure eradication of the bacteria?

Evidence-Based Answer

When using proton pump inhibitor (PPI) triple therapy, increasing the duration of treatment from seven to 10 days or from 10 to 14 days significantly increases the eradication of *H. pylori*. When using other treatment regimens, it is unclear whether increasing duration of treatment changes eradication rates. (Strength of Recommendation: A, based on consistent, good-quality patient-oriented evidence.)

Practice Pointers

It is well established that treating *H. pylori* infection with a combination of antibiotics and histamine H_2 blockers or PPIs can effectively treat peptic ulcer disease and prevent recurrence,[1] but the optimal regimen and length of treatment have been debated. This Cochrane review included 75 studies of eight different *H. pylori* treatment regimens to determine the optimal length of treatment to achieve bacterial eradication, as well as to examine adverse effects.

The combination of a PPI and two antibiotics, known as PPI triple therapy, is the most common *H. pylori* eradication regimen.[1] This Cochrane review compared eradication rates for seven-, 10-, and 14-day regimens of four subtypes of PPI triple therapy. Thus, a PPI was added to each of the following antibiotic regimens: clarithromycin (Biaxin) plus amoxicillin; clarithromycin plus a nitroimidazole (such as metronidazole [Flagyl]); amoxicillin plus a nitroimidazole; or amoxicillin plus a quinolone (such as ofloxacin). The review also evaluated the eradication rates for the PPI triple therapy group as a whole. This part of the review included 59 studies with five different treatment regimens.

Across all three treatment durations, *H. pylori* eradication improves with a longer duration of PPI triple therapy. The number needed to treat (NNT) for one additional *H. pylori* eradication is 21 (95% confidence interval [CI], 15 to 38) when treatment is lengthened from seven to 10 days; the NNT is 17 (95% CI, 11 to 46) when increasing from 10 to 14 days, and 11 (95% CI, 9 to 14) when increasing from seven to 14 days. This was particularly true of the treatment regimens containing amoxicillin. Studies examining the combination of a PPI, clarithromycin, and a nitroimidazole did not show a difference in eradication rates when comparing treatment durations.

The authors also examined 19 additional studies that evaluated seven other *H. pylori* eradication regimens over the course of seven, 10, or 14 days: PPI plus bismuth salt plus two antibiotics; PPI plus three antibiotics; PPI plus one antibiotic; H_2 blocker plus bismuth salt plus an antibiotic; H_2 blocker plus two antibiotics; bismuth salt plus two antibiotics; and H_2 blocker bismuth quadruple therapy (H_2 blocker plus *either* bismuth salt plus two antibiotics *or* ranitidine bismuth citrate [not available in the United States] plus two antibiotics). There were few randomized controlled trials available for each of these treatment regimens. Across the three treatment durations, no significant differences were noted in the rate of *H. pylori* eradication except with the use of H_2 blocker bismuth quadruple therapy. Only one study was available for this treatment regimen, and the eradication rate was higher in persons treated for 14 days than in those treated for seven days (NNT = 3; 95% CI, 2 to 4).

Adverse effects were similar for all treatment regimens, with the most common being diarrhea, taste disturbance, nausea or vomiting, skin rash, and epigastric discomfort. The rate of adverse effects was slightly

higher in patients receiving PPI triple therapy for 14 days vs. seven days (relative risk [RR] = 1.21; 95% CI, 1.06 to 1.37; number needed to harm [NNH] = 31), with no significant difference found in comparisons of seven days vs. 10 days, or 10 days vs. 14 days. The only significant differences related to length of treatment for specific adverse effects were found in taste disturbance (RR = 1.67; 95% CI, 1.10 to 2.52; NNH = 47) and nausea or vomiting (RR = 1.81; 95% CI, 1.10 to 2.96; NNH = 57). Despite the increase in reported adverse effects, no significant difference was found in the seven-day vs. 14-day group after therapy was discontinued. There were no significant differences in adverse effects based on treatment duration for any alternative *H. pylori* regimens.

H. pylori causes several gastrointestinal disorders such as peptic ulcer disease, chronic gastritis, and gastric cancer.[2] This Cochrane review demonstrates that PPI triple therapy, which is the most studied regimen to date, has an increased *H. pylori* eradication rate with an increased duration of treatment. The optimal treatment duration for PPI triple therapy is 14 days. This Cochrane review was unable to draw any conclusions about the optimal treatment duration or effectiveness of any alternative *H. pylori* treatment regimens in comparison with the standard PPI triple therapy because of the paucity of data for alternative regimens. Given the prevalence of *H. pylori* in the population and the rates of antibiotic resistance, more studies are needed to examine the effectiveness of the other treatment regimens.

SOURCE: Yuan Y, Ford AC, Khan KJ, et al. Optimum duration of regimens for *Helicobacter pylori* eradication. *Cochrane Database Syst Rev.* 2013;(12):CD008337.

The practice recommendations in this activity are available at http://summaries.cochrane.org/CD008337.

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