



# THERAPEUTICS INITIATIVE

Evidence Based Drug Therapy

## Definitive Treatment of Peptic Ulcer Disease by Eradication of Helicobacter Pylori (*H.pylori*)

The following quotation by a Gastroenterologist, Dr. Ransohoff, amply defines the impact of the discovery of *H.pylori* on our thinking about peptic ulcer disease:

"The long-held hypothesis that duodenal ulcer disease is caused primarily by acid has, after a decade of siege by the *H.pylori* hypothesis, finally collapsed. That the acid hypothesis could even be challenged, much less toppled, appeared as unthinkable 10 years ago as the fall of Communism in the former USSR. Within the last few years, strong evidence has accumulated, however, about *H.pylori*'s importance, persuading even this previously skeptical writer."<sup>1</sup>

• **What is *H. pylori*?**

*H. pylori* is a gram-negative, microaerophilic, spiral bacillus (see Figure) originally cultured in 1982 from gastric biopsy specimens in patients with documented gastritis.

• **What conditions are associated with *H. pylori* infestation?**

Strong evidence demonstrates that *H. pylori* is a causal factor in gastritis and duodenal ulcer<sup>2</sup> and to a lesser extent gastric ulcer. Moderate epidemiologic evidence supports a relation between *H. pylori* and gastric adenocarcinoma and lymphoma.



• **What upper GI conditions are not associated with *H. pylori* infestation?**

Most evidence indicates that NSAID induced ulcers and reflux esophagitis are not associated with *H. pylori* infestation. There is insufficient evidence to link non-ulcer dyspepsia symptoms with *H. pylori*.<sup>2,3</sup> Proper randomized controlled trials are needed to investigate this relationship.

• **What treatments have been satisfactorily tested at this time?**

A meta analysis of the results of treatment in adults is shown in Table 1. The ulcer recurrence rate at 1 year is less than 10% if *H. pylori* is eradicated and greater than 50% if *H. pylori* is *not* eradicated.

Table 1: Results of Treatment of Helicobacter pylori<sup>5,7</sup>

Treatment	<i>H. pylori</i> eradication rate * (n)
H2 blockers alone	No effect
Omeprazole alone	No effect
Bismuth and amoxicillin	44% (197)
Bismuth and metronidazole	55% (118)
Omeprazole and amoxicillin	58% (433) #
Bismuth, metronidazole and amoxicillin	73% (130)
Bismuth, metronidazole and tetracycline	94% (434)

\* measured one month after stopping antibiotics  
(n) number of patients in meta-analysis

# meta-analysis done by the Therapeutics Initiative



• **What are the advantages to my patients if *H. pylori* is successfully eradicated?**

Most patients with recurrent peptic ulcer disease will be "cured". This means they will no longer need any maintenance therapy for suppression of ulcer symptoms. In a recent study of 35 patients in whom *H. pylori* was effectively eradicated, 32 (92%) remained *H. pylori* and ulcer negative after an average follow-up period of 7 years.<sup>4</sup>

• **What is the best treatment and how long do you treat?**

The dose and duration of the two most effective regimens are shown in Table 2. The addition of an agent to decrease acid production (e.g.cimetidine) improves symptom resolution in the first week, but has no effect on ulcer resolution or *H. pylori* eradication.<sup>7</sup>

• **What about safety and compliance?**

The incidence of side effects with the one week triple therapy (tetracycline) regimen was 14 out of 210 (7%) including dizziness, nausea, metallic taste and diarrhea. Side effects due to local gastric irritation can be minimized by taking the medication together with a glass of water. **It is important to emphasize the importance of compliance to the patient;** with triple therapy *H. pylori* was eradicated in 96% of patients who took more than 60% of the medication. Shorter, simpler and equally effective regimens may become available, but the data are insufficient at this time.

• **When should you treat *H. pylori* infection?**

- All patients with proven gastric or duodenal ulcers who are infected with *H. pylori*.
- Patients with previously proven recurrent duodenal ulcers who are currently requiring maintenance antiulcer therapy.
- For management of the small number of peptic ulcers in children a definitive endoscopic and microbiological diagnosis is advisable.<sup>6</sup>

Table 2: Triple therapy regimens

Medication	Dose	Duration	Trade Names	Daily ingredient cost*
Bismuth subsalicylate	30 ml QID	1 week <sup>7</sup>	Pepto Bismol	\$1.26 <sup>+</sup>
Tetracycline #	500 mg QID	1 week <sup>7</sup>	Achromycin, Tetracyn, Medicycline Novotetra, Nu Tetra	\$0.16
Metronidazole	250 mg QID	1 week <sup>7</sup>	Flagyl, NeoTric, Novonidazol, TriKacide	\$0.12

Or Replacement of Tetracycline # with:

Amoxicillin	500 mg QID	2 weeks for each of the 3 ingredients <sup>5</sup>	Amoxil, ApoAmoxi, Axicillin, Novamoxin, Nu Amoxi, Pro Amix	\$0.84
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# tetracycline is contraindicated in children and during pregnancy, <sup>+</sup>over the counter, \* lowest cost alternative formulation (BC, 1993)

References

- 1.Ransohoff DF. *Commentary. Ann Int Med (ACP Journal Club suppl.)* 1994, May/June; 62-63.
- 2.Sander JO, Veldhuyzen van Zanten SJ, Sherman PM: *Helicobacter pylori* infection as a cause of gastritis, duodenal ulcer, gastric cancer and nonulcer dyspepsia: a systematic overview. *Can Med Assoc J* 1994; 150(2):177-185.
- 3.Sander JO, Veldhuyzen van Zanten SJ, Sherman PM: *Indications for treatment of Helicobacter pylori* infection: a systematic overview. *Can Med Assoc J* 199A;150(J2):189-198.
- 4.Forbes GM, Glaser ME, Cullen DJE, Warren JR, Christiansen KJ, Marshall BJ, Collins BJ: *Duodenal ulcer treated with Helicobacter pylori* eradication: year follow-up.*Lancet* 1994; 343:258-260.
- 5.Chiba N, Rao BV, Rademaker JW, et al: *Meta-analysis of the efficacy of antibiotic therapy in eradicating Helicobacter pylori*. *Am J Gastroenterol* 1992; 87:1716-1727.
- 6.Hassall E: *Clinical practice guidelines for suspected peptic ulcer disease in children*. *BC Med J*, 1994; 36(8): 538-539.
- 7.Hoskins SW, Ling TKW, Chung SCS, Yung YM, Cheng A, Sung JY, Li AKC: *Duodenal ulcer healing by eradication of Helicobacter pylori* without antacid treatment: randomized controlled trial. *Lancet* 1994; 343:508-510.

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