

H. pylori Eradication {Indicated especially for 1. peptic ulcer disease 2. gastric MALT lymphoma}



| | Selected Regimens | Days | Cost | ITT ≥80% | Comments ¹ |
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| <p>First-Line Triple Therapy</p> <p>(PPI + metronidazole + clarithromycin)</p> <p>C</p> <p>(ranitidine+bismuth +2 antibiotics also effective)</p> | <p>lansoprazole -PREVACID 30mg po BID ☞☺</p> <p>metronidazole -FLAGYL 500mg po BID</p> <p>clarithromycin -BIAXIN 250mg po BID ☞▼</p> | X7d | \$ 82 | ✓ | <ul style="list-style-type: none"> • 250mg dose of clarithromycin preferred as better tolerated, equal or better efficacy (MACH I study²), and less costly than using the 500mg dose as in the PPI + amoxicillin regimens • lansoprazole & pantoprazole regimens less potential DI's than omeprazole but the generic LOSEC 1-2-3-M regimen is cheaper • avoid <u>alcohol!</u> (DI: metronidazole → disulfiram rx.) • SE's: taste disturb. (~14%), diarrhea (~13%), headache (~6%); Also (less common): neuropathy, coated tongue • esomeprazole NEXIUM ☞ ⊗ 20mg po BID an alternative to listed PPIs <p>Drug-Lab Interaction: PPIs (but not H2RA's) must be discontinued 1 or 2 weeks prior to culture, histology, or ¹³C-urea breath testing for <i>H. pylori</i>.</p> |
| | <p>LOSEC 1-2-3-M: omeprazole 20mg po BID ☞☺</p> <p>metronidazole 500mg po BID</p> <p>clarithromycin 250mg po BID ☞▼</p> | X7d | \$72 generic \$86 Losec | ✓ | |
| | <p>pantoprazole -PANTOLOC 40mg po BID ☞☺</p> <p>metronidazole -FLAGYL 500mg po BID</p> <p>clarithromycin -BIAXIN 250mg po BID ☞▼</p> | X7d | \$ 81 | ✓ | |
| <p>First-Line Triple Therapy</p> <p>(PPI + amoxicillin + clarithromycin)</p> <p>C</p> <p>(ranitidine+bismuth +2 antibiotics also effective)</p> | <p>Hp-PAC ☞ ▼: lansoprazole 30mg po BID ☞☺</p> <p>amoxicillin 1000mg po BID</p> <p>clarithromycin 500mg po BID ☞▼</p> | X7d | \$ 98 | ✓ | <ul style="list-style-type: none"> • Hp-PAC: contains the triple combination in a 7 day blister pack • lower dose of clarithromycin (250mg) was effective in some studies of this regimen but not currently recommended; using the 500mg XL is cheaper than using the regular formulation • SE's: diarrhea (~28%), taste disturbance (~15%) • MCI's: avoid if penicillin allergy • esomeprazole NEXIUM ☞ ⊗ 20mg po BID as effective as omeprazole 20mg BID and an alternative to listed PPIs³ • rabeprazole PARIET ☞▼ 20mg BID -FDA approval; similar efficacy⁴; least expensive PPI; 7day rabeprazole/amoxicillin/clarithromycin = \$90 |
| | <p>LOSEC 1-2-3-A: omeprazole 20mg po BID ☞☺</p> <p>amoxicillin 1000mg po BID</p> <p>clarithromycin 500mg XL BID ☞▼</p> | X7d | \$92 generic \$106 Losec | ✓ | |
| | <p>pantoprazole 40mg po BID ☞☺</p> <p>amoxicillin 1000mg po BID</p> <p>clarithromycin 500mg XL BID ☞▼</p> | X7d | \$ 101 | ✓ | |
| <p>MACLOR STUDY⁵</p> <p>Arch Intern Med 2002</p> | <p>ranitidine 300mg po BID</p> <p>or lansoprazole 30mg po BID ☞☺</p> <p>metronidazole - FLAGYL 500mg po BID</p> <p>amoxicillin 1000mg po BID</p> <p>clarithromycin - BIAXIN 250mg po BID ☞▼</p> | X5d | \$ 60 ran. - 77 lans. | ✓ | <ul style="list-style-type: none"> • SE's: taste disturb. (~25%), diarrhea (~13%), headache; Also (less common): neuropathy, coated tongue; •avoid <u>alcohol!</u> • MCI's: avoid if penicillin allergy • ER^{ITT}: ranitidine 88.8%; lansoprazole 89.2% (5day arms)⁴; (98.6% in patients age ≥55 yr & no history of peptic ulcer disease) |
| <p>Alternative Second-Line Quadruple Regimens</p> <p>(PPI + bismuth + 2 antibiotics)</p> | <p>lansoprazole 30mg po BID ☞☺</p> <p>bismuth subsalicylate-PEPTO BISMOL 30mls po QID</p> <p>metronidazole 250mg po QID</p> <p>tetracycline 500mg po QID ac D</p> | X7d | \$ 72 | ✓ | <ul style="list-style-type: none"> • These quadruple therapies less well tolerated & more complex to take therefore reserved for treatment failures • PEPTO BISMOL suspension preferred to tablets to avoid drug interaction with tetracycline (PEPTO BISMOL tablets contain calcium carbonate which can interfere with tetracycline) • SE's: temporary darkening of stool and tongue, diarrhea • MCI's: porphyria, renal dysfx (CrCl <25ml/min), pregnancy, children; avoid alcohol • 1 day regimen is a newer approach with much less clinical experience & was used in <i>H. pylori</i> positive dyspeptic pts⁶ |
| | <p>omeprazole 20mg po BID ☞☺</p> <p>bismuth subsalicylate-PEPTO BISMOL 30mls po QID</p> <p>metronidazole 250mg po QID</p> <p>tetracycline 500mg po QID ac D</p> | X7d | \$62 generic \$75 Losec | ✓ | |
| | <p>lansoprazole 60mg po x1 dose only ☞☺; then bismuth subsalicylate-PEPTO BISMOL 2 tab QID & metronidazole 500mg QID & amoxicillin 2g susp qid</p> | X1d | \$ 40 | ✓ | |

Cost=total retail cost to consumer in Sask. ☞ =EDS Exceptional Drug Status in Sask. ☺=prior approval for NIHB coverage ▼ =covered by NIHB ⊗ =not covered by NIHB **DI**=Drug interactions **ER**=eradication rate **MCI's**=major contraindications **PPI**=Proton pump inhibitors **SE's**=Side Effects **Length of Therapy** 7day regimens ↓cost & ↑compliance; however higher ER's with 10-14 day regimens **Compliance** likely most important factor in achieving eradication; Patients should be warned of side effects & encouraged to complete treatment. **Resistance** USA CDC 2002: metronidazole ~25%, clarithromycin ~13% & amoxicillin ~1% and may affect eradication rates.⁷ Bismuth/metronidazole combinations appear to be effective even in areas of higher metronidazole resistance **Follow-up acid suppression** (with PPI or H2 receptor antagonist) not generally indicated once *H. pylori* eradicated⁸ except for acute ulcer healing, symptomatic, and complicated/high risk patients.

Other regimens in the literature: **1.** Classic triple therapy (bismuth 30ml po QID + metronidazole 250mg po QID + tetracycline 500mg po QID x14days; ER~78%^{ITT}) **2.** Quadruple 14 day therapy (ranitidine 300mg po BID + bismuth 30ml po QID +metronidazole 250mg po QID + tetracycline 500mg po QID; ER >80%^{ITT}) Intention to treat analysis (**ITT**): Canadian Consensus Conference 1998 classified treatments as "recommended" when controlled trials had at least 80% eradication efficacy by ITT analysis.⁹

♦ Lifestyle changes for **DIET, EXERCISE, moderate alcohol use & stop SMOKING!**

The Rx Files - H. pylori Eradication

References

¹ Micromedex 2004

² Lind T, Veldhuyzen van Zanten S, Unge P. Eradication of *Helicobacter pylori* using one-week triple therapies combining omeprazole with two antimicrobials: the MACH I Study. *Helicobacter* 1996;1(3):138-44.

³ Van Zanten V, Lauritsen K, Delchier JC, Labenz J, De Argila CM, Lind T. One-week triple therapy with esomeprazole provides effective eradication of *Helicobacter pylori* in duodenal ulcer disease. *Aliment Pharmacol Ther*. 2000 Dec;14(12):1605-11.

⁴ Wong BC, Wong WM, Yee YK, Hung WK, Yip AW, Szeto ML, Li KF, Lau P, Fung FM, Tong TS, Lai KC, Hu WH, Yuen MF, Hui CK, Lam SK. Rabeprazole-based 3-day and 7-day triple therapy vs. omeprazole-based 7-day triple therapy for the treatment of *Helicobacter pylori* infection. *Aliment Pharmacol Ther*. 2001 Dec;15(12):1959-65.

⁵ Treiber G, Wittig J, Ammon S, Walker S, van Doorn LJ, Klotz U. Clinical outcome and influencing factors of a new short-term quadruple therapy for *Helicobacter pylori* eradication: a randomized controlled trial (**MACLOR** study). *Arch Intern Med*. 2002 Jan 28;162(2):153-60.

⁶ Lara LF, Cisneros G, Gurney M, Van Ness M, Jarjoura D, Moauro B, Polen A, Rutecki G, Whittier F. One-day quadruple therapy compared with 7-day triple therapy for *Helicobacter pylori* infection. *Arch Intern Med*. 2003 Sep 22;163(17):2079-84.

⁷ Duck WM, Sobel J, et al. Antimicrobial resistance incidence & risk factors among *Helicobacter pylori*-infected persons, United States. *Emerg Infect Dis*. 2004 Jun;10(6):1088-94.

⁸ Liu CC, Lee CL, Chan CC, Tu TC, Liao CC, Wu CH, Chen TK. Maintenance treatment is not necessary after *Helicobacter pylori* eradication and healing of bleeding peptic ulcer: a 5-year prospective, randomized, controlled study. *Arch Intern Med*. 2003 Sep 22;163(17):2020-4.

⁹ Hunt R, Thompson A, Consensus Conference participants. Canadian *Helicobacter pylori* Consensus Conference. *Can J Gastroenterol* 1998;12(1):31-41.