**Peptic ulcer diseases**

**Desired Outcomes**

The goals of PUD therapy are to:

(1) resolve symptoms

(2) reduce acid secretion

(3) promote epithelial healing

(4) prevent ulcer-related complications

(5) prevent ulcer recurrence. For HP-related PUD, eradication of HP is an additional outcome.

**Non-pharmacologic Therapy**

Patients with PUD should avoid exposure to factors known to worsen the disease, exacerbate symptoms, or lead to ulcer recurrence. Patients should be advised to reduce psychological stress and avoid cigarette smoking, alcohol consumption, foods or beverages that exacerbate ulcer symptoms, and NSAID or aspirin use. surgical interventions are generally reserved for complicated or refractory PUD.

**Pharmacologic Therapy**

**Treatment of *Helicobacter pylori*–Associated Ulcers**

The HP regimen that is chosen should have a per-protocol cure rate of greater than or equal to 80%-90%. In addition to proven efficacy, the optimal treatment regimen should cause minimal adverse events, have low risk for the development of bacterial resistance, and be cost effective.

Eradication therapy with a PPI-based three-drug regimen should be considered for all patients who test positive for HP and have an active ulcer or a documented history of either an ulcer or ulcer-related complication. Different antibiotics should be used if a second course of HP eradication therapy is required.

**First line –Omeprazole oral 20 mg twice daily (or lansoprazole oral 30 mg twice daily) and Clarithromycin oral 500 mg twice daily and Amoxicillin\* oral 1 g twice daily. \*In penicillin allergy use tetracycline oral 500 mg twice daily.**

**Second line –** Substitute: **Clarithromycin for metronidazole oral 400 mg twice daily.**

* Patients should be counselled on the importance of compliance before starting treatment and in those patients taking metronidazole on the avoidance of alcohol because of the risk of a disulfiram-like reaction.
* After 1 week’s treatment all medication can be stopped, except where ulcers have bled or perforated, when a PPI will be continued.
* A breath test should be carried out 28 days after completion of treatment to check that eradication has been successful if the patient is still symptomatic.

**N.B.** Healing of gastric ulcers must be confirmed by endoscopy after 6 - 8 weeks

**Drug Regimens to Eradicate *Helicobacter pyloria***

**Treatment Regimen Cure Rates**

**Two Drugs**

Amoxicillin 1 g three times a day + omeprazole 20 mg twice a day Poor

Clarithromycin 500 mg three times a day + omeprazole 40 mg every day Poor

Clarithromycin 500 mg three times a day + RBC 400 mg twice a day Fair

**Three Drugs**

Clarithromycin 500 mg twice a day + metronidazole 500 mg twice a day + omeprazole 20 mg twice a day Good–excellent

Clarithromycin 500 mg twice a day + amoxicillin 1 g twice a day + lansoprazole 30 mg twice a day Good–excellent

Clarithromycin 500 mg twice a day + metronidazole 500 mg twice a day + RBC 400 mg twice a day Good

Amoxicillin 1 g twice a day + clarithromycin 500 mg twice a day + RBC 400 mg twice a day Good

**Four Drugs**

BSS 525 mg four times a day + metronidazole 250 mg four times a day + tetracycline 500 mg four times Good–excellent

a day + H2RA (conventional ulcer-healing dose)*c*

BSS 525 mg four times a day + metronidazole + amoxicillin + PPI*d Good*

**Rescue Therapy*e***

BSS 525 mg four times a day + metronidazole 500 mg four times a day + tetracycline 500 mg four times Good–excellent

a day + omeprazole 20 mg twice a day*d*

Furazolidone 200 mg twice a day + amoxicillin 1 g twice a day + omeprazole 20 mg twice a day*f* Good

Amoxicillin 1 g twice a day + rifabutin 300 mg every day + pantoprazole 40 mg twice a day*g* Good–excellent

*a*These regimens based on efficacy for a 14-day treatment duration unless otherwise noted.

*b*Cure rates based on intention-to-treat analysis from references 3, 12, 14, and 35, where: poor = less than 70% eradication, fair =

70–80%, good = 80–90%, and excellent = greater than 90%.

*c*H2RA therapy should be continued for an additional 2 weeks.

*d*Duration of therapy is 7–10 days.

*e*Data based on refractory treatment data.

*f*Given for 7 days.

*g*Given for 10 days.

BSS, bismuth subsalicylate; H2RA, H2-receptor antagonist; PPI, proton pump inhibitor; RBC, ranitidine bismuth citrate (not available

in the United States).

**Treatment of NSAID-Induced Ulcers**

Choice of regimen in a patient with PUD related to NSAID use depends on whether NSAID use is to be continued. NSAIDs should be discontinued if possible and replaced with alternatives (such as acetaminophen) although this may not be desirable or feasible in some patients. For patients discontinuing NSAID therapy, PPIs, H2RAs, or sucralfate are all effective for ulcer healing. PPI therapy heals NSAID ulcers faster than H2RAs.

**Prevention of NSAID-Induced Ulcers**

Prophylactic regimens against PUD are often required in patients who require long-term NSAID or aspirin therapy for osteoarthritis, rheumatoid arthritis, or cardioprotection. Misoprostol, H2RAs, PPIs, have been evaluated in controlled trials to reduce the risk of NSAID-induced PUD. PPIs at standard doses reduce the risk of both gastric and duodenal ulcers as effectively as misoprostol and are generally better tolerated

**IV proton pump inhibitors**

* If the patient is unable to take oral therapy give: **omeprazole 40 mg by slow IV bolus injection**
* If patient has had endoscopic haemostasis for a bleeding ulcer give: **omeprazole infusion,** initial 80 mg dose(give 80 mg in 100 ml sodium chloride 0.9% infused over 40 - 60 mins). **followed by: continuous infusion of 8 mg/hour for 72 hours** (make up 80 mg in 100 ml sodium chloride 0.9%, infuse at 10 ml (8 mg) per hour over 10 hours for a total of 72 hours) **followed by maintenance dose: omeprazole oral** 20 mg each day for 8 weeks

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**Persisting symptoms**

Omeprazole oral treatment dose 40 mg once daily for 4 - 8 weeks, then maintenance dose 20 mg once daily or Lansoprazole oral treatment dose 30 mg once daily for 4 - 8 weeks, then maintenance dose 15 mg once daily.

**Long-term maintenance**

• Aim for lowest dose proton pump inhibitor (PPI) needed to control symptoms.

**Ongoing symptoms**

• Try higher dose PPI and seek specialist advice.

**Note:** Low-dose maintenance therapy with a PPI or H2RA is only indicated for patients who fail HP eradication, have HP-negative ulcers, or develop severe complications related to ulcer disease.

**On discharge**

• Arrange 13C Urea Breath Test in 8 weeks if H. pylori eradication therapy given.

• Continue PPI for 6 weeks and then change to H2 antagonist prior to breath test.

• Repeat OGD (Oesophagogastroduodenoscopy) in 8 weeks if gastric ulcer found.

**Patient Care and Monitoring**

**General Recommendations: HP-Associated and NSAID Induced Ulcers**

1. Assess the severity of signs and symptoms. Identify the presence of any alarm signs and symptoms.

2. Educate the patient on monitoring for alarm signs and symptoms.

3. Obtain a history of prescription medication, over-the counter medication, and dietary supplement use.

4. Encourage lifestyle modifications such as reducing tobacco use and ethanol ingestion and decreasing psychological stress.

5. Determine the appropriate duration of therapy for acidsuppressive therapy.

6. Define the current impact of PUD on the patient’s quality of life and the improvement in these outcomes sought with drug therapy.

7. Evaluate current drug therapy for potential adverse drug reactions and drug interactions.

**Helicobacter pylori–Associated Ulcers**

1. Recommend an appropriate drug regimen that will eradicate the organism.

2. Identify the patient’s drug allergies and avoid drug classes a patient is allergic to.

3. Avoid regimens with tetracycline in children.

4. Educate patients on specific adverse drug effects, particularly with metronidazole (avoidance of alcohol) and bismuth (change in stool color).

5. Assess the potential for drug interactions, particularly in patients taking regimens containing metronidazole, clarithromycin, and/or cimetidine.

6. Recommend different antibiotics if this treatment regimen is a result of failure of a prior HP regimen.

7. Educate the patient on the importance of adherence to eradication therapy.

**NSAID-Associated Ulcers**

1. Assess for risk factors for NSAID ulcers and recommend an appropriate strategy to reduce ulcer risk.

2. Monitor for signs and symptoms of complications associated with NSAID-related ulceration.

3. Recommend an appropriate treatment regimen to achieve the desired outcomes.

4. Assess and counsel patients on potential adverse drug events and drug interactions.

5. Inform patients who are receiving prophylactic therapy on the importance of its use, potential adverse drug events, and the possible alarm symptoms associated with PUD.

**(Omeprazole, Misoprostol, cimetidine, metronidazole,and clarithromycin)**