DIAGNOSIS AND MANAGEMENT OF PEPTIC ULCER DISEASE

SELF GUIDED LEARNING MATERIAL

FOUR (4) CPD POINTS

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OBJECTIVES

By the end of the course, the learner should be able to:

- Define peptic ulcer disease and identify its main causes and risk factors.
- Assess a patient, recognise alarm signs, and select appropriate *H. pylori* tests.
- Explain PUD medicines and appropriate *H. pylori* eradication treatment.
- Counsel patients on taking treatment correctly and managing adverse effects.
- Recognise complications that require emergency referral.
- Advise on preventing recurrence and arrange follow-up, including confirmation of *H. pylori* eradication when indicated

Introduction

Peptic ulcer disease (PUD) is an open sore in the lining of the stomach or duodenum that extends through the muscularis mucosae into deeper tissue.

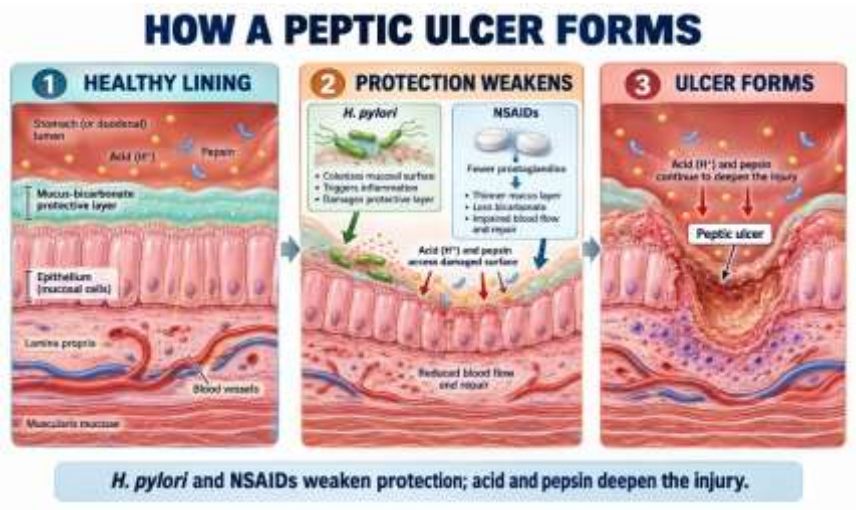
The two main types of PUD are gastric ulcers and duodenal ulcers.

The leading causes of peptic ulcer disease are *Helicobacter pylori* infection and the use of non-steroidal anti-inflammatory drugs (NSAIDs).

Without appropriate treatment, peptic ulcer disease may cause bleeding, perforation or gastric outlet obstruction.

Pathophysiology

Peptic ulcers develop when develops when aggressive factors overwhelm the mechanisms that protect and repair the gastroduodenal mucosa.



Aggressive factors	Protective factors
Gastric acid and pepsin	Mucus and bicarbonate secretion
H. pylori infection	Adequate mucosal blood flow
NSAIDs	Prostaglandins
Smoking and bile reflux	Rapid epithelial repair

Causes

***I). Helicobacter pylori* infection**

H. pylori is a Gram-negative bacterium that colonises the stomach. It produces urease, which helps it survive in an acidic environment, and causes inflammation that weakens mucosal protection.

The damaged mucosa becomes vulnerable to acid and pepsin, leading to ulceration.

II). Use of Non-Steroidal Ant inflammatory Disease (NSAIDs)

Non-selective NSAIDs such as diclofenac, piroxicam and ibuprofen can cause ulcers and GIT bleeding.

NSAIDs inhibit cyclo-oxygenase-1 (COX-1) reducing the production of protective prostaglandins that maintain gastric mucosal blood flow and stimulate mucus and bicarbonate secretion.

This weakens the stomach's protective barrier, increasing the risk of gastric irritation, ulceration and gastrointestinal bleeding

Risk is higher in patients who are older than 65 years. Have a previous ulcer or gastrointestinal bleed or use high-dose NSAIDs.

III). Cigarette smoking

Smoking weakens the gastric lining, delays ulcer healing and increases the risk of complications and recurrence. Patients should be supported to stop smoking**.**

IV). Excessive alcohol consumption

Excessive drinking of alcohol directly irritates and inflames the gastric lining, weakening its protective barrier and increasing the risk of gastritis and gastrointestinal bleeding.

Although alcohol is not a major direct cause of peptic ulcers, it may worsen ulcer symptoms and delay healing

v) Emotional stress

Emotional stress does not directly cause most peptic ulcers, but it may worsen symptoms and increase risk.

Clinical presentation

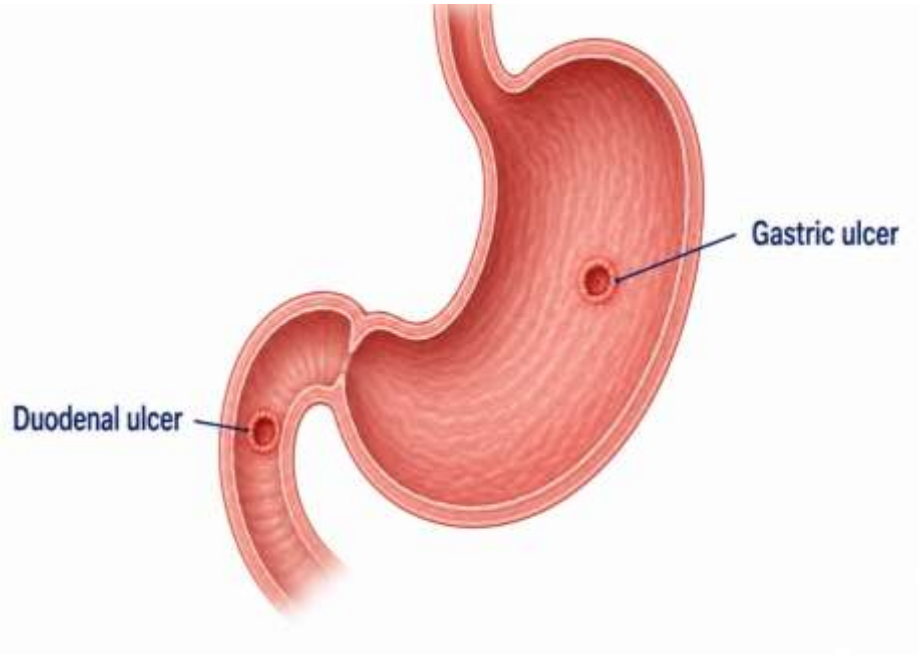
Patients with peptic ulcer present with symptoms such as

- Epigastric pain.
- Abdominal discomfort or fullness.
- Bloating and belching.
- Nausea or vomiting.
- Reduced appetite.

Some patients particularly older adults and those using NSAID may have few symptoms until complication develops like bleeding or perforation occurs.

Types of peptic ulcer

Peptic ulcer disease mainly presents as a **gastric ulcer** or **duodenal ulcer**.



Their symptoms often overlap; therefore, the timing of pain alone cannot reliably identify the ulcer site.

Differences between gastric and duodenal ulcer

Clinical feature	Gastric ulcer	Duodenal ulcer
Site	Stomach, commonly the antrum or lesser curvature	First part of the duodenum, usually the duodenal bulb
Typical patient	More common in older adults	Often occurs in younger adults, but may occur at any age
Cause	Impaired gastric mucosal defence, allowing acid and pepsin to damage the lining	Increased acid exposure combined with weakened duodenal mucosal protection
Acid production	Usually normal or reduced	Usually normal or increased
Pain pattern	Epigastric pain may occur or worsen soon after eating	Pain often occurs when the stomach is empty or 2–3 hours after eating Nocturnal pain is common
Effect of food	Food may worsen pain, causing reduced food intake or weight loss	Food or antacids may temporarily relieve pain
Major causes	*H. pylori* and prolonged use of NSAIDs	*H. pylori and* NSAIDs
Weight	Weight loss may occur because eating causes pain	Weight may be maintained or increased
Malignancy	Some gastric cancers may appear as ulcers; biopsy is usually required to exclude malignancy	*Malignancy is rare*

Community Pharmacy/ Drug shop Assessment

Ask

- Where is the pain, when did it start, and how severe is it?
- Is there vomiting of blood, coffee-ground vomit, black tarry stool or fresh blood?
- Is there persistent vomiting, difficulty swallowing, weight loss, dizziness or fainting?
- Is the patient taking NSAIDs, aspirin, steroids, anticoagulants or antiplatelets?
- Is there a history of peptic ulcer, GI bleeding or recent *H. pylori* treatment?

Pain related to meals does not reliably distinguish gastric from duodenal ulcers.

Check

Where possible, assess pulse, blood pressure, pallor, hydration, abdominal distension and guarding. Avoid deep abdominal palpation unless trained.

Refer immediately

Do not treat these patients only with over-the-counter medicines. Assess briefly, provide appropriate first aid and refer promptly.

Red-flag finding	Possible concern	Pharmacy action
Vomiting blood or coffee-ground material	Upper gastrointestinal bleeding	Refer immediately to an emergency department. Keep the patient nil by mouth and do not give NSAIDs.
Black, tarry stool (melaena)	Usually, upper gastrointestinal bleeding	Refer immediately, particularly if accompanied by weakness, dizziness, pallor, fainting or a rapid pulse.
Fresh or dark-red blood in the stool	Gastrointestinal bleeding	Refer urgently. Arrange immediate transfer if bleeding is heavy, persistent or associated with faintness
Sudden or severe abdominal pain	Perforated ulcer, pancreatitis, obstruction or another acute abdominal emergency	Refer immediately. Keep the patient nil by mouth and avoid NSAIDs, laxatives and unnecessary oral medicines.
Rigid abdomen, guarding or severe pain when the abdomen is touched	Peritonitis or perforation	Medical emergency: arrange immediate transfer to hospital.

Refer urgently for progressive dysphagia, painful swallowing, weight loss, suspected anaemia or persistent symptoms.

Diagnosis of Peptic Ulcer Disease

Symptoms alone cannot confirm PUD or reliably distinguish a gastric ulcer from a duodenal ulcer.

Diagnosis involves testing for *H. pylori* and, when indicated and upper gastrointestinal endoscopy.

H.pylori test

Test	Role
Stool antigen test	Preferred non-invasive test for active infection and confirmation of eradication.
• Stop PPIs or P-CABs for 2 weeks, when clinically safe. • Avoid antibiotics and bismuth for at least 4 weeks. • Confirm eradication at least 4 weeks after completing treatment	

Upper gastrointestinal endoscopy

Endoscopy is the best test for confirming PUD but may not be readily available in every Ugandan health facility. Refer for endoscopy when the patient has:

- Gastrointestinal bleeding or other complications. .
- Unexplained weight loss or anaemia.
- Progressive difficulty swallowing.
- Persistent vomiting.
- Severe, recurrent or treatment-resistant symptoms.
- Suspected perforation, obstruction or malignancy.

Endoscopy identifies the ulcer, permits control of bleeding and allows biopsy.

Gastric ulcers should usually be biopsied to exclude cancer

Differential diagnosis

Consider other conditions that may present like peptic ulcer disease:

Condition	Distinguishing features
Gastritis	Epigastric burning, nausea or discomfort, often associated with NSAIDs, alcohol or *H. pylori*. Symptoms alone may not distinguish it from PUD.
Gastro-oesophageal reflux disease	Burning behind the chest, acid regurgitation and symptoms that worsen after meals, bending or lying down.
Functional dyspepsia	Recurrent epigastric discomfort, early fullness or bloating without an ulcer or other structural disease on investigation.
Gastric cancer	Persistent symptoms with unexplained weight loss, early satiety, progressive vomiting, anaemia or an abdominal mass. Refer urgently.
Pancreatitis	Severe, persistent upper abdominal pain that often spreads to the back, with nausea or vomiting. Commonly associated with alcohol use or gallstones.
Gallbladder disease	Right upper abdominal pain, often after fatty meals, which may spread to the right shoulder or back. Fever or jaundice suggests complications.
Irritable bowel syndrome	Recurrent abdominal pain associated with passing stool or a change in stool frequency or consistency. Bloating, constipation, diarrhoea or alternating bowel habits are common.

Management of peptic ulcer disease

Aim of Treatment

- Relieve symptoms and heal the ulcer.
- Eradicate *H. pylori* when present.
- Stop or reduce ulcer-causing medicines.
- Prevent recurrence and complications.
- Detect gastric malignancy early.

Patient education and counselling

- Take all prescribed medicines exactly as directed and complete the full *H. pylori* eradication regimen, even when symptoms improve.
- Return for a test confirming *H. pylori* eradication. The test is usually performed at least 4 weeks after completing antibiotics or bismuth and after stopping proton-pump inhibitors for approximately 2 weeks, when clinically safe.
- Do not self-medicate with NSAID painkillers such as ibuprofen, diclofenac**,** piroxicam, aspirin or indomethacin because they can cause or worsen ulcers and bleeding.
- Stop smoking because it can delay ulcer healing and increase the risk of recurrence and complications.
- Avoid or limit alcohol, particularly during active symptoms or treatment, because it may irritate the stomach and worsen symptoms.
- Eat a balanced diet and reduce only foods or drinks that consistently worsen your symptoms.
- Eat regular or smaller meals to improve comfort
- Avoid unregulated herbal or traditional "ulcer remedies," as their ingredients, safety and interactions may be uncertain.
- If heartburn or acid reflux is also present, avoid lying down for 2–3 hours after eating; this advice is for reflux control rather than ulcer healing.
- Seek urgent medical care for vomiting blood, black tarry stool, fainting, severe weakness, persistent vomiting or sudden severe abdominal pain**.**

Drugs used in treatment of peptic ulcer

1 Antacids

Antacids neutralise existing gastric acid and provide rapid, short-term relief of epigastric pain and heart burn

They do not eradicate *H. pylori* and should not be relied upon to heal complicated ulcers.

Component	Role	Possible side effects
Magnesium hydroxide	Neutralises gastric acid and provides rapid symptom relief.	Diarrhoea
Aluminium hydroxide	Neutralises gastric acid and may balance the diarrhoeal effect of magnesium salts.	Constipation; aluminium accumulation in severe kidney impairment.
Sodium bicarbonate	Rapid, short-acting neutralisation of gastric acid.	Belching, sodium and fluid retention and metabolic alkalosis with excessive use
Calcium carbonate	Rapidly neutralises gastric acid.	Constipation, belching and hypercalcaemia with excessive or prolonged use.
Sodium alginate	Forms a floating protective barrier over stomach contents and reduces acid reflux into the oesophagus.	Bloating or nausea; some preparations contain substantial sodium, requiring caution in heart failure, hypertension and kidney disease.
Simethicone	Breaks up gas bubbles and relieves bloating and flatulence It does not reduce gastric acid or heal ulcers.	Generally well tolerated; occasional nausea, constipation or diarrhoea.
oxethazaine	Local anaesthetic that temporarily relieves pain caused by acid irritation of the stomach or oesophagus.	Nausea, dizziness, constipation or diarrhoea It may mask persistent or worsening symptoms and should be used only for a short period.

Patient counselling points on antacid use

- Shake antacid suspensions well before measuring off each dose.
- Chew tablets only if they are labelled as chewable.
- Take ciprofloxacin at least 2 hours before or 6 hours after an antacid containing minerals such as magnesium, aluminium or calcium.
- Chew antacid tablets thoroughly before swallowing with a lot of water.
- Use only the recommended dose; avoid frequent or prolonged use without medical review.
- Take ciprofloxacin at least 2 hours before or 6 hours after an antacid.

- Check with the pharmacist about timing if using tetracyclines, iron or levothyroxine
- Seek medical service if symptoms persist, or worsen.

2. Misoprostol

Misoprostol is a synthetic prostaglandin E_1 analogue. It protects the stomach lining by increasing mucus and bicarbonate secretion, supporting mucosal blood flow and reducing gastric acid secretion.

It reduces the risk of NSAID-induced gastric ulcers, particularly in patients who must continue NSAID treatment and have a high risk of ulcer complications.

However, proton-pump inhibitors are often preferred because misoprostol commonly causes diarrhoea and abdominal cramps and requires frequent dosing.

Item	Guidance
Indication	Prevention of NSAID-induced gastric ulcers in high-risk adults who need to continue taking an NSAID.
Usual adult dose	200 micrograms four times daily, taken after meals and at bedtime.
Duration	Continue for as long as NSAID treatment is required
Side effects	Diarrhoea, abdominal cramps, nausea, flatulence and headache.
Contraindication	Misoprostol must not be used to prevent NSAID-induced ulcers in a pregnant woman because it stimulates uterine contractions.

Obstetric and gynaecological uses

Misoprostol may also be used for cervical ripening, induction of labour, management of miscarriage and prevention or treatment of postpartum haemorrhage.

These uses require different doses and routes from those used for ulcer prevention.

Prevention of postpartum haemorrhage: misoprostol 600 micrograms orally as a single dose immediately after birth when oxytocin or another injectable uterotonic is unavailable or cannot be safely used.

Treatment of postpartum haemorrhage: misoprostol 800 micrograms sublingually as a single dose

Patient counselling on misoprostol

Misoprostol helps prevent stomach ulcers caused by NSAIDs. It does not provide rapid relief from ulcer pain.

Misoprostol helps protect your stomach while you take an NSAID. It will not quickly relieve ulcer pain.

- Take misoprostol exactly as prescribed

- You may have loose stools or stomach cramps and avoid antacids containing magnesium.
- Do not take misoprostol if you are pregnant
- Keep taking misoprostol for as long as prescribed while you take the NSAID.
- Seek urgent medical care if you vomit blood, pass black tarry stools, faint, or develop sudden, severe abdominal pain

3.Sucralfate

Sucralfate is a mucosal-protective medicine. In the acidic stomach environment, it binds mainly to the ulcer surface and forms a protective barrier against gastric acid, pepsin and bile salts. It has little effect

Item	Guidance
Indication	Short-term treatment of an active duodenal ulcer.
Adult dose	1 g every 6 hours daily on an empty stomach 1 hour before breakfast, lunch and the evening meal, and again at bedtime.
Duration of treatment	Usually 4–8 weeks
Side effect	Constipation. Others include nausea, dry mouth or abdominal discomfort
Renal precaution	Use cautiously in severe kidney impairment because the aluminium contained in sucralfate may accumulate.
Interactions	Sucralfate can bind some oral medicines such as fluoroquinolones, tetracyclines, levothyroxine, digoxin and phenytoin and reduce their absorption.
Antacids	Do not take antacids within 30 minutes before or after sucralfate.

Patient counselling on sucralfate

- Sucralfate forms a protective coating over your ulcer to help it heal. It does not reduce stomach acid.
- Take it exactly as prescribed. A common adult dose is 1 g four times daily taken one hour before each main meal and at bedtime.
- Take sucralfate on an empty stomach, without food.
- Continue taking sucralfate for the prescribed period usually 4–8 weeks, even if your pain improves.
- If you use a liquid, shake the bottle and measure each dose with measuring spoon included in the container
- Tell your dispenser in case you are taking other medicines since sucralfate can reduce absorption of many drugs,

4.Bismuth Subsalicylate

Bismuth subsalicylate is a mucosal-protective and antidiarrheal medicine.

It coats irritated gastrointestinal mucosa, reduces intestinal fluid secretion and inflammation, and has activity against some organisms and toxins that cause diarrhoea.

Bismuth subsalicylate also has activity against *Helicobacter pylori* but must be combined with other medicines for eradication.

Item	Guidance
Dosage forms	Common preparations include 262 mg chewable tablets and 262 mg/15 mL oral suspension.
Indications	Short-term relief of acute uncomplicated diarrhoea, nausea, indigestion, heartburn and upset stomach. It is also used as part of bismuth-based quadruple therapy for *H. pylori*. eradication
Adult and ≥12-year dose for acute diarrhoea or dyspepsia	Tablets 524 mg or 30 mL of the 262 mg/15 mL suspension every 30–60 minutes as needed. Do not exceed 8 doses in 24 hours.
H. pylori treatment	A commonly used dose is 524 mg 4 times daily for 14 days, combined with a proton-pump inhibitor, tetracycline and metronidazole.
Side effects	Temporary blackening of the tongue or stool, constipation, nausea and abdominal discomfort.
Precaution	Contains salicylate. Excessive doses or prolonged use may cause salicylate toxicity or bleeding
Duration for self-treatment	For acute diarrhoea, use for no longer than 2 days without medical review.

Contraindications

Do not recommend bismuth subsalicylate in patients who:

- Are allergic to aspirin or other salicylates.
- Have active gastrointestinal bleeding, a bleeding disorder, unexplained black or bloody stool
- Are taking anticoagulants or antiplatelet medicines unless a clinician has assessed the benefits and risks.
- Have severe kidney impairment, because salicylate and bismuth toxicity may occur.
- Are pregnant, particularly from 20 weeks onward, unless specifically prescribed. A safer alternative should generally be selected.

Patient counselling points for subsalicylate

- Chew chewable tablets thoroughly before swallowing.
- If using a suspension, shake the bottle well and measure each dose with the spoon
- A temporary dark tongue or dark stool can occur and usually clears after treatment.
- Stop taking the medicine and seek medical advice if diarrhoea lasts more than 48 hours, worsens, or occurs with fever, blood or mucus in the stool.
- Follow the dose on prescription and do not exceed it or continue treatment for longer than advised.
- Tell your dispenser if you are taking aspirin, blood thinners or antiplatelet medicines, or if you are allergic to aspirin.
- Stop the medicine and seek urgent care if you develop ringing in the ears, reduced hearing, confusion, rapid breathing or persistent vomiting
- For chewable tablets, chew thoroughly before swallowing.

5.Proton Pump Inhibitors (PPIs)

Proton pump inhibitors are drugs that strongly reduce gastric acid production. They are used to treat acid-related gastrointestinal disorders.

Example include omeprazole, esomeprazole. lansoprazole, pantoprazole and rabeprazole**.**

Dosage forms

Proton pump inhibitors are available in form of enteric coated tablets, granules, capsules and injection for IV use

- Omeprazole (capsules 20 mg, 40 mg; IV injection 40 mg)
- Pantoprazole (tablets 20 mg, 40 mg)
- Esomeprazole (tablets 20 mg, 40 mg; IV injection 40 mg; sachets 10mg for oral suspension)
- Rabeprazole (tablets 20 mg, 40 mg; IV injection 40 mg)
- Lansoprazole (capsules 30 mg)

Mode of action

PPIs irreversibly block the hydrogen–potassium ATPase, or proton pump, in gastric parietal cells. This blocks the final stage of acid production and markedly reduces gastric acidity.

Indications

- Gastro-oesophageal reflux disease and erosive oesophagitis.

- Peptic ulcer disease.
- *H. pylori* eradication as part of combination triple therapy.
- Prevention and treatment of NSAID-associated ulcers.
- Zollinger–Ellison syndrome.
- Upper gastrointestinal bleeding

Dosage guide

PPI	GERD	Duodenal ulcer	Gastric ulcer	*H. pylori* regimen	NSAID-ulcer prevention
Omeprazole	20 mg once daily for 4–8 weeks	20 mg once daily for 4 weeks	20 mg once daily for 4–8 weeks	20 mg twice daily for 14 days	20 mg once daily
Esomeprazole	20–40 mg once daily for 4–8 weeks	20 mg once daily for 4 weeks	20 mg once daily for 4–8 weeks	20 mg twice daily for 14 days	20 mg once daily
Lansoprazole	30 mg once daily for 4–8 weeks	30 mg once daily for 4 weeks	30 mg once daily for 4–8 weeks	30 mg twice daily for 14 days	15–30 mg once daily
Pantoprazole	40 mg once daily for 4–8 weeks	40 mg once daily for 4 weeks	40 mg once daily for 4–8 weeks	40 mg twice daily for 14 days	20 mg once daily
Rabeprazole	20 mg once daily for 4–8 weeks	20 mg once daily for 4 weeks	20 mg once daily for 4–8 weeks	20 mg twice daily for 14 days	20 mg once daily

Contraindications

Do not use PPIs in patients with known allergy to any of the members

Use PPIs cautiously in patients with:

- Severe liver impairment.
- Unexplained weight loss, persistent vomiting, difficulty swallowing, anaemia, gastrointestinal bleeding or a suspected gastric malignancy.
- Osteoporosis or a high fracture risk.

- Low magnesium or vitamin B12 levels.

Side Effects

- Headache.
- Abdominal discomfort.
- Nausea or vomiting.
- Diarrhoea or constipation.
- Flatulence.

Drug interactions

Interacting medicine	Clinical importance
Clopidogrel	Omeprazole and esomeprazole may reduce clopidogrel activation. Consider pantoprazole or another suitable PPI.
Atazanavir and some other antiretrovirals	Reduced absorption may cause treatment failure
Itraconazole and other pH-dependent medicines	Reduced gastric acidity may decrease absorption.
High-dose methotrexate	PPIs may delay methotrexate elimination and increase toxicity.
Warfarin	Some PPIs may increase anticoagulant effects; monitor the INR when indicated.
Digoxin	Absorption and toxicity risk may increase, particularly when magnesium is low.

Patient counselling points for PPIs

- Take your PPI 30–60 minutes before meals
- Swallow delayed-release tablets or capsules without crushing or chewing them
- Full clinical response takes several days of continuous use
- For *H. pylori*, complete all prescribed medicines for the full course.
- Seek medical review if symptoms persist, worsen or return. Seek urgent care for vomiting blood, black tarry stools, severe chest or abdominal pain, or inability to swallow.
- Before an *H. pylori* breath or stool test, ask your clinician about stopping the PPI for 2 weeks.
- Testing to confirm eradication should be at least 4 weeks after finishing treatment.

6.Potassium-Competitive Acid Blockers (P-CABs)

Description

Potassium-competitive acid blockers are a newer class of medicines that rapidly and strongly reduce gastric acid production.

Vonoprazan is the only member available in Uganda

Compared with PPIs, P-CABs act faster, provide stronger and more consistent 24-hour acid suppression

Vonoprazan can be taken with or without food and does not require acid activation or an enteric coating

However, these advantages do not mean that P-CABs are more suitable than PPIs for every patient or acid-related condition.

Dosage forms

Vonoprazan is commonly available as tablets of 20 mg

Mode of action

Vonoprazan reversibly and competitively block potassium binding to the hydrogen–potassium ATPase, or proton pump, in gastric parietal cells.

Unlike PPIs, they do not require activation by gastric acid and can inhibit both active and resting proton pumps.

This produces rapid, and sustained acid suppression.

Indications

Vonoprazan may be used for:

- Gastro-oesophageal Reflux Disease.
- Heartburn associated with non-erosive GERD.
- Gastric and duodenal ulcers.
- *H. pylori* eradication in combination with antibiotics.
- Prevention of NSAID associated ulcers.

Dosage guide

Indication	Dosage	Duration
Healing erosive GERD	20 mg once daily	8 weeks
Maintenance of healed erosive GERD	10 mg once daily	Up to 6 months; review regularly
Heartburn associated with non-erosive GERD	10 mg once daily	4 weeks
Gastric ulcer	20 mg once daily	Up to 8 weeks
Duodenal ulcer	20 mg once daily	Up to 6 weeks
NSAID- ulcer prevention	10 mg once daily	While significant risk continues
H. pylori dual therapy	20 mg twice daily plus amoxicillin 1 g three times daily	14 days
H. pylori triple therapy	20 mg twice daily plus amoxicillin 1 g and clarithromycin 500 mg twice daily	14 days

Clinical Position in Peptic Ulcer Disease

PPIs remain the usual first-line medicines for uncomplicated peptic ulcer disease because they are effective, widely available and supported by extensive long-term safety data.

P-CABs may be considered when:

- Rapid and sustained acid suppression is required.
- The ulcer does not respond to correctly used PPI therapy.
- The patient cannot tolerate a PPI.

Role in *H. pylori* Eradication

Vonoprazan provides strong and sustained acid suppression, which may improve the effectiveness of acid-sensitive antibiotics such as amoxicillin.

Vonoprazan–amoxicillin dual therapy for 14 days as an alternative for patients without penicillin allergy.

Contraindications

Do not use vonoprazan in patients with Known hypersensitivity to vonoprazan

Precautions

Use cautiously in patients with moderate or severe liver impairment and severe kidney impairment.

Patients with low magnesium or vitamin B12 levels.

Side Effects

- Abdominal discomfort.
- Diarrhoea or constipation.
- Nausea.
- Indigestion.
- Headache.

Drug Interactions

Interacting medicine	Remarks
Itraconazole	Reduced gastric acidity may decrease antifungal absorption.
Strong liver enzyme inducers like rifampicin, carbamazepine	Rifampicin, carbamazepine and phenytoin may reduce vonoprazan effectiveness.
Methotrexate	Acid suppressants may delay methotrexate elimination and increase toxicity.

Patient counselling points

- Take vonoprazan exactly as prescribed, with or without food.
- Swallow the tablet whole with water.
- When treating *H. pylori*, take all medicines at the prescribed times and complete the full 14-day regimen, even if symptoms improve.
- Do not stop long-term treatment without consulting the prescriber.
- Seek urgent care for vomiting blood, black tarry stools, difficulty swallowing, severe abdominal pain or unexplained weight loss.
- Report severe or persistent diarrhoea, rash, facial swelling or difficulty breathing immediately.
- Before an *H. pylori* stool antigen, withhold vonoprazan for approximately 2 weeks, when clinically safe.
- Perform the test of cure at least 4 weeks after completing antibiotics

Tripple therapy combination

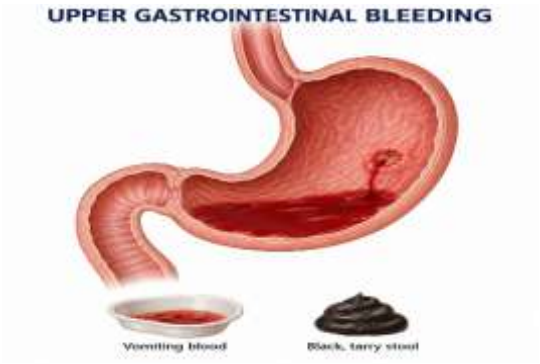
All patients with confirmed *H. pylori* infection should receive an effective eradication regimen for **14 days**.

Regimen	Dosage	Duration
Clarithromycin-based triple therapy	Standard-dose PPI twice daily + amoxicillin 1 g twice daily + clarithromycin 500 mg twice daily	14 days
Clarithromycin triple therapy for penicillin allergy	Standard-dose PPI twice daily + clarithromycin 500 mg twice daily + metronidazole 400 mg three times daily	14 days
Levofloxacin-based triple therapy	Standard-dose PPI twice daily + amoxicillin 1 g twice daily + levofloxacin 500 mg once daily	14 days

Acute complications

a). Upper gastrointestinal bleeding

Upper gastrointestinal bleeding is the most common major complication of PUD and may occur without preceding ulcer symptoms.



Signs and symptoms

- Haematemesis or coffee-ground vomit.
- Melaena; brisk bleeding may cause haematochezia.
- Dizziness, fainting, severe weakness or pallor.
- Tachycardia, hypotension or shock.

Management

- Assess the airway and circulation; keep nil by mouth and insert two large-bore IV cannulas.
- Take blood for full blood count, urea and electrolytes, grouping and cross-matching.
- Give IV crystalloids while arranging blood and definitive care.
- Transfuse packed red cells at haemoglobin below about **7 g/dL** in most stable adults. Consider earlier transfusion in massive bleeding, shock or significant cardiovascular disease.
- Urgently refer to a hospital with blood transfusion, endoscopy and surgical services.
- Perform endoscopy after stabilisation, ideally within 24 hours.
- Treat high-risk lesions with clips or thermal therapy, with or without adrenaline injection. Do not use adrenaline alone.
- After successful haemostasis, give high-dose IV PPI for example, pantoprazole 80 mg IV followed by 8 mg/hour for 72 hour

b) Intestinal perforation

Intestinal perforation is a full-thickness hole in the wall of the small or large intestine. Air and intestinal contents can escape into the abdominal cavity, causing peritonitis and potentially sepsis.

Perforation is a surgical emergency and any delay increases the risk of peritonitis, septic shock, organ failure and death.

Signs and symptoms

- Severe abdominal pain, which may begin suddenly and become widespread.
- Abdominal tenderness, guarding, rebound tenderness or a rigid abdomen.
- Fever, vomiting, reduced bowel sounds, rapid pulse or signs of shock. .

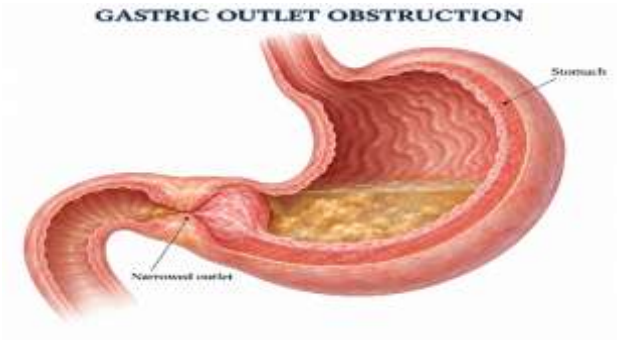
Management

- Refer immediately to a hospital with surgical capacity.
- Keep nil by mouth; insert a nasogastric tube and urinary catheter.
- Give IV fluids, analgesia, oxygen if hypoxaemic and broad-spectrum IV antibiotics.
- Start an IV PPI and correct electrolyte abnormalities.
- Perform urgent laparotomy or laparoscopy where available
- Test for and eradicate *H. pylori* after stabilisation; discontinue NSAIDs.
- Reserve non-operative treatment for a carefully selected, stable patient with a confirmed sealed perforation under close specialist surgical monitoring.

c) Gastric outlet obstruction

Gastric outlet obstruction is a blockage at the lower end of the stomach or the first part of the duodenum that prevents food and fluid from emptying normally into the small intestine.

It may result from swelling or scarring associated with peptic ulcer disease, or from a tumour.



Gastric and pancreatic cancer should be considered, particularly in an older patient or one with unexplained weight loss.

Signs and symptoms

- Repeated vomiting after meals, usually without bile; the vomit may contain food eaten hours earlier.
- Early satiety, nausea and upper abdominal fullness.
- Dehydration and weight loss.

Suspected gastric outlet obstruction requires prompt clinical assessment to identify the cause and correct dehydration.

Management

- Urgently admit or refer to a hospital with endoscopy and surgical services.
- Keep nil by mouth and insert a nasogastric tube for decompression.
- Give IV fluids and correct electrolyte disturbances.
- Start a PPI, stop NSAIDs and treat *H. pylori* if present.
- Perform upper gastrointestinal endoscopy with biopsy to identify the cause and exclude malignancy.
- Use endoscopic balloon dilatation for a suitable benign stricture.
- Refer for surgery if obstruction persists, recurs or malignancy is suspected.

d) Gastric malignancy

A gastric ulcer may be malignant or conceal gastric cancer. Endoscopic biopsy is therefore essential for most gastric ulcers.

Follow-up endoscopy should confirm healing, commonly after 6–8 weeks.

Conclusion

Peptic ulcer disease is common and successful management requires adequate acid suppression, eradication of *H. pylori*, safer NSAID use, adherence to treatment and appropriate follow-up.

PPIs remain the standard acid-suppressing treatment in most Ugandan settings.

P-CABs provide faster and more sustained acid suppression, but their role depends on availability and cost

Early recognition of bleeding, perforation and gastric outlet obstruction and urgent referral for definitive care can prevent avoidable disability and death.

References

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