



Non-Prescription Self-Treatment of GERD

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Upon completing this article the pharmacist should be able to:

OBJECTIVES

1. Describe the physiology of the anti reflux barrier as it relates to the pathophysiology of GERD.
2. Recognize the symptoms of GERD in a patient in the community
3. Differentiate patients with non prescription treatable GERD and patients who need to be referred to their physician.
4. Recommend appropriate lifestyle modifications for a given patient.
5. Discuss the available non prescription options for the treatment of GERD, and recognize which ones are appropriate in patient-specific situations.
6. Design a care plan for a patient in the community setting with GERD.

INTRODUCTION

Gastroesophageal reflux is common in the United States and Europe, and its prevalence is increasing in other countries. Gastroesophageal reflux refers to the movement of acidic gastric contents into the esophagus, which can cause heartburn and acid regurgitation. When these symptoms of reflux become more frequent and bothersome to the patient, it can now be called gastroesophageal reflux disease, or GERD. The term "frequent" has been more specifically defined as two or more heartburn episodes a week. The American Gastroenterological Association (AGA)'s position statement in 2008

defines GERD as "a condition which develops when the reflux of the stomach contents causes troublesome symptoms and/or complications."

While the terms are still used casually and interchangeably, patients who have symptoms of GERD without evidence of mucosal damage technically have non erosive reflux disease, or NERD. To simplify terms so that a patient can understand, many times practitioners use the term "heartburn" to describe GERD, which is fitting since heartburn is one of the hallmark symptoms of GERD. To a patient, heartburn usually refers to a burning sensation that rises from behind the sternum to the throat. The purpose of the AGA position statement's definition is through using the word "troublesome," episodic heartburn and GERD can be distinguished. Now that GERD receives plenty of attention, in part due to direct to consumer advertising for prescription and non prescription medications, the public is becoming increasingly aware of the terminology. For the sake of consistency, GERD will be used as an umbrella term to describe the disease of these patients seeking relief from non prescription antacids,

Useful Web Sites

■ www.heartburnalliance.org

The National Heartburn Alliance Web site has patient education materials to print and order, research articles, and a downloadable program called "Self Directed Treatment of Heartburn" that reviews heartburn and educates pharmacists on how to teach patients about it. The National Heartburn Alliance has partnered with the American Pharmacists Association Academy of Student Pharmacists in their national disease project "Heartburn Awareness Challenge."

■ www.drgourmet.com

The "Dr. Gourmet" Web site has recipes for several diseases, including GERD. Recipes here avoid ingredients that aggravate GERD symptoms.

■ www.gastro.org

The American Gastroenterological Association Web site has a patient specific section, with questions and answers regarding GERD, and a GI doctor finder.

Table 1. Foods and medications affecting LES pressure

	Foods	Medications
Increase LES pressure	Protein	Metoclopramide Prostaglandin Cisapride Bethanechol
Decrease LES pressure	Fat Chocolate Ethanol Peppermint	Nitrates Calcium channel blockers Theophylline Morphine Meperidine Diazepam Barbiturates

histamine 2 receptor blockers (H2RAs), and proton pump inhibitors (PPIs).

The importance of treating GERD relates not only to the improvement in a patient's quality of life, but in avoiding several serious complications. For example, deep ulcers, which can cause hemorrhage, strictures, and perforation were shown to be present in 6–8 percent of patients with untreated erosive esophagitis. Hemorrhage of esophageal lesions were shown in one study to be responsible for 14 percent of upper GI bleed patients with GERD, though these patients had other GI related complications. Barrett's esophagus, a premalignant condition, accounts for 10–15 percent of patients undergoing endoscopy for GERD. Strictures, which are considered one of the most serious complications of GERD, were also once considered the most frequent complication, with up to 22 percent of patients having esophagitis. More recently, the incidence of strictures has decreased to about 0.2 percent in one study, largely due to the wide availability of PPIs.

Community pharmacists are well equipped to screen, counsel, and treat patients with typical GERD symptoms. Additionally, with the ability to easily and frequently follow up, we can not only ensure patients are experiencing relief of symptoms, but also refer them to their physician as needed.

PATHOPHYSIOLOGY

It is physiologically normal for gastric contents to reflux into the esophagus. However, when the esophageal mucosa is subjected to excessive exposure of this acidic fluid due to the breakdown of different defense mechanisms, then the reflux is destructive and physiologically abnormal and can be considered GERD.

GERD occurs when the antireflux barrier is not functioning properly, and allows gastric contents to reflux and come in contact with the esophagus. The antireflux barrier is comprised of many anatomic mechanisms working together. When these mechanisms break down, reflux can occur. These mechanisms include defects in esophageal acid clearance, salivation, and tissue resistance. The most common mechanism by which the antireflux barrier fails is related to the lower esophageal sphincter (LES). The LES is located at the esophago gastric junction (EGJ) and serves as a valve, preventing fluid from re entering the esophagus.

Transient LES relaxations (TLESRs) are common, and present in those with and without GERD. TLESRs occur when the intra abdominal pressure changes, allowing the LES to open, and thus allow gastric contents to reflux into the esophagus. In patients without GERD, peristalsis and the neutralizing effect of saliva prevent the esophagus from being exposed to the acidic refluxate, thus preventing the patient from experiencing symptoms. In patients with GERD, esophageal clearance, mucosal resistance, and salivation may all be impaired. Therefore, when TLESRs in patients with GERD are not accompanied by normal esophageal defense mechanisms, they will experience heartburn and acid regurgitation, possibly as far as the oropharynx, among other symptoms.

Patients with GERD not only experience symptoms with TLESRs, but also experience more TLESRs than patients without GERD. The most common trigger for TLESRs is gastric distention. Gastric distention, obesity, and pregnancy can all increase intra-abdominal pressure, leading to TLESRs.

The LES can also undergo decreases in pressure, leading to decreased tone and therefore increased reflux. Normal resting tone of the LES is 10 to 30 mmHg over intragastric pressure, though this can fluctuate throughout the day to as high as 80 mmHg. LES pressure tends to decrease in the postprandial state and increase during sleep. Besides intra abdominal pressure

Table 2. Symptoms and risk factors indicating physician referral in patients with possible GERD

Alarm Symptoms	Atypical Symptoms	Risk Factors
<ul style="list-style-type: none"> • Unintentional weight loss • Hematemesis (vomiting blood) • Melena (tarry stools) • Dysphagia (difficulty swallowing) • Odynophagia (painful swallowing) • Severe symptoms 	<ul style="list-style-type: none"> • Chest pain • Predominant epigastric pain • Belching • Hoarseness • Sore throat • Cough 	<ul style="list-style-type: none"> • Age >40 in areas with high prevalence of gastric cancer (otherwise >50–55) • New onset of symptoms in patients >45 • Family history of gastric and/or esophageal cancer • Chronic NSAID use due to irritation of the esophageal mucosa

and gastric distention, several other factors affect LES pressure, including myogenic factors, peptides, hormones, various foods, and medications. In the community, it is helpful to be aware of the foods and medications that affect LES pressure when counseling a patient with GERD. Protein rich foods, metoclopramide, prostaglandins, cisapride, and bethanechol can all increase LES pressure. Fatty foods, chocolate, peppermint, and alcohol and medications including nitrates, calcium channel blockers, theophylline, morphine, meperidine, diazepam, and barbiturates can all decrease LES pressure (Table 1).

SYMPTOMS OF GERD

As mentioned earlier, the hallmark symptoms of GERD are heartburn and acid regurgitation. The symptoms experienced by patients with GERD fall into a fairly large spectrum. Patients' symptoms tend to differ based on intensity, duration, and frequency of GERD episodes. In addition, patients may have symptoms that are mild, periodic, and intermittent, or they may have symptoms that occur daily and are severe in nature. Given the varying nature of symptoms and presentations of GERD, no single treatment is appropriate for every patient. In a community pharmacy setting, it is important to understand the patient's symptoms and choose the appropriate treatment accordingly. If a patient has mild, periodic symptoms, or symptoms so frequent that they have GERD, they can still use non-prescription treatment.

GERD is not limited to esophageal symptoms. Some patients with severe disease, or disease that has been present for a while and not treated, may have extraesophageal symptoms, or atypical symptoms. These patients

should be initially evaluated by their physician to rule out serious mucosal damage. These symptoms include laryngitis, non cardiac chest pain, and asthma, which tend to manifest because of constant acid regurgitation and subsequent esophageal irritation. Other patients, in particular those who present initially to a community pharmacy, may experience associated symptoms in addition to heartburn and acid regurgitation. These symptoms may include nausea, lower GI complaints, and sleep disturbances.

DIAGNOSIS OF GERD

Many patients rely on self diagnosis of GERD, taking antacids and H2RAs that are available in the pharmacy without a prescription. This is appropriate in cases of mild and uncomplicated GERD, which can easily be treated with non prescription medications. Patients who present to their physician for evaluation of GERD symptoms are often treated empirically for eight weeks with a PPI. Diagnostic tools such as upper endoscopy, barium esophogram, and pH monitoring are used in patients who have symptoms of complications or have failed a PPI trial.

When counseling a patient seeking treatment for GERD, it is important to ensure the patient is using the term "heartburn" in the same way it is understood by health care providers. By establishing that a patient's description of their symptoms includes a feeling of burning behind the breastbone that rises up to the throat or neck might help differentiate between GERD and other types of GI discomfort or cardiac symptoms.

Once it is determined that a patient is in fact suffering from typical heartburn, further information must be gathered to rule out complicated GERD that should be referred to a physician. Two criteria in particular that indicate a patient can be self treated for GERD are symptoms that occur in the post prandial period, and symptoms that are relieved quickly with antacids. Any patient presenting with symptoms indicating complications from GERD, also known as

Table 3. Foods that decrease LES pressure and irritate esophageal mucosa and that should be avoided in patients with GERD

Foods that cause reflux by decreasing LES pressure	Foods that irritate the esophageal mucosa
Fatty or fried foods Coffee, tea, caffeinated beverages Chocolate Mint	Citrus Tomatoes Onions Carbonated beverages Spicy foods

alarm symptoms, should consult with a physician before starting a treatment plan. Alarm symptoms include unintentional weight loss, hematemesis (vomiting blood), melena (tarry stools), dysphagia (difficulty swallowing), odynophagia (painful swallowing), and severe symptoms. Additionally, patients presenting with atypical symptoms, or who fall into risk categories for esophageal or gastric cancer should consult with a physician before starting self treatment.

Atypical symptoms include chest pain, primarily epigastric pain, belching, hoarseness, sore throat, and cough. Risk factors for esophageal or gastric cancer include patients in the 50–55 age group or older than 40 in areas with high prevalence of gastric cancer, new onset of symptoms in patients older than 45, family history of esophageal or gastric cancer, and chronic NSAID use. These symptoms and risk factors can be found in Table 2.

In addition, patients who have had a trial of a non-prescription PPI after two to four weeks and have persistent symptoms should also be referred to their physician for further analysis. It also may be prudent to refer patients who are being treated for other disease states requiring medical management and who are taking multiple medications. Finally, patients who have had success with a two or four week trial of a non-prescription PPI that need to repeat the therapy frequently may benefit from continuous PPI treatment, and should be referred to a physician.

TREATMENT

Goals of Treatment

The goals of treatment (figure 1) with medications used for GERD include: symptom relief or reduction of symptom frequency, symptom resolution or remission, and prevention of complications and healing of erosive esophagitis. Table 5 contains a medication selection and patient counseling guide.

Lifestyle Modifications

It has been shown that patients do benefit from adopting

lifestyle modifications as part of their treatment for GERD. There are a great deal of lifestyle modifications that have shown to help alleviate and prevent GERD symptoms, but there are too many to recommend every one to every patient. Several sources indicate that specific lifestyle modifications that are appropriate to a particular patient are effective, but recommending every modification to every patient is not effective. For example, weight loss should not be recommended universally, as some patients may have GERD without being overweight.

Lifestyle modifications can be classified into three different categories: avoiding foods that cause reflux by decreasing LES pressure; avoiding foods that precipitate heartburn by being irritating to the mucosa; and avoiding factors that increase risk of esophageal acid exposure. Foods that decrease LES pressure include fatty or fried foods, chocolate, mint, coffee, tea, and other caffeinated beverages. Foods that irritate the esophageal mucosa include citrus, tomatoes, onions, carbonated beverages, and spicy foods. These foods can all be found in Table 3. Some medications also can irritate the esophagus. These include oral potassium, non-steroidal anti-inflammatory drugs (NSAIDs), and alendronate. Esophageal acid exposure is increased in patients who smoke, those who are overweight or obese, and those who consume alcohol. In that case, patients who fall into these categories should be counseled about how their lifestyle choices may exacerbate their symptoms. Patients who smoke should stop, and patients who consume alcohol should reduce their intake. Patients who are overweight or obese should not only lose weight, but also avoid wearing tight clothing and undergarments, which can affect

Table 4. Available non-prescription H2RAs and PPIs: products and dosing

Class	Drug Name (Brand)	Dosing
H2RA	Nizatidine (Axid AR)	75–150 mg BID prn
	Famotidine (Pepcid AC)	10–20 mg BID prn
	Cimetidine (Tagamet HB)	200 mg BID prn
	Ranitidine (Zantac)	75–150 mg BID prn
PPIs	Omeprazole (Prilosec)	20 mg daily
	Lansoprazole (Prevacid)	15 mg daily

intra abdominal pressure. It is possible that overweight or obese patients who lose weight first might avoid the need for medication treatment.

It is not uncommon for patients to complain of symptoms after meals and at bedtime. For patients with symptoms after meals, it is recommended to eat smaller, more frequent meals to avoid gastric distention, which is a main trigger for reflux. It is also advised that patients avoid lying down within two to three hours after eating. Patients with symptoms at bedtime should avoid eating within three hours of going to bed to allow for gastric clearance. Also, these patients may try elevating the head of the bed by several inches, allowing gravity to clear refluxate from the esophagus.

Antacids

Antacids are readily available, very widely used, and usually the first treatment patients use for heartburn. Many of these patients find relief and do not seek further treatment for their GERD. While antacids are effective in treating mild to moderate GERD symptoms, their role in GERD treatment is primarily for ameliorating breakthrough symptoms while taking H2RAs or PPIs. Using antacids alone for GERD is not effective in preventing esophagitis.

Antacids act locally to increase the pH and neutralize the contents of the stomach, but do not suppress acid production like H2RAs and PPIs. Antacids are very rapid acting but have short duration, but when used in combination with a PPI or H2RA can alleviate immediate symptoms with a longer effect. Studies comparing antacids to placebo or H2RAs generally show that antacids are better at symptom relief than placebo, but not better at symptom relief or healing of esophagitis than H2RAs.

Available Dosage Forms/Products

Antacids are available in both chewable tablet and liquid formulations. They contain one or more of the following salts: magnesium hydroxide, aluminum hydroxide, calcium carbonate, and sodium bicarbonate. A few antacid products are available with alginic acid, which reacts with saliva to form sodium alginate. Sodium alginate sits on top of the stomach contents and acts as a barrier, keeping the esophageal mucosa from being exposed to the acidic fluid. While alginic acid containing are theoretically useful, they have not been shown to be more effective than other antacids.

It is important to not concentrate on brand names, as some companies use a single name to market products with different ingredients. In February 2010, the FDA issued a warning to consumers regarding Maalox Total Relief. Other Maalox products contain aluminum hydroxide, magnesium hydroxide, or calcium carbonate. Maalox Total Relief actually contains bismuth subsalicylate, putting patients with aspirin allergy in danger, as well as patients taking medications that interact with aspirin related compounds.

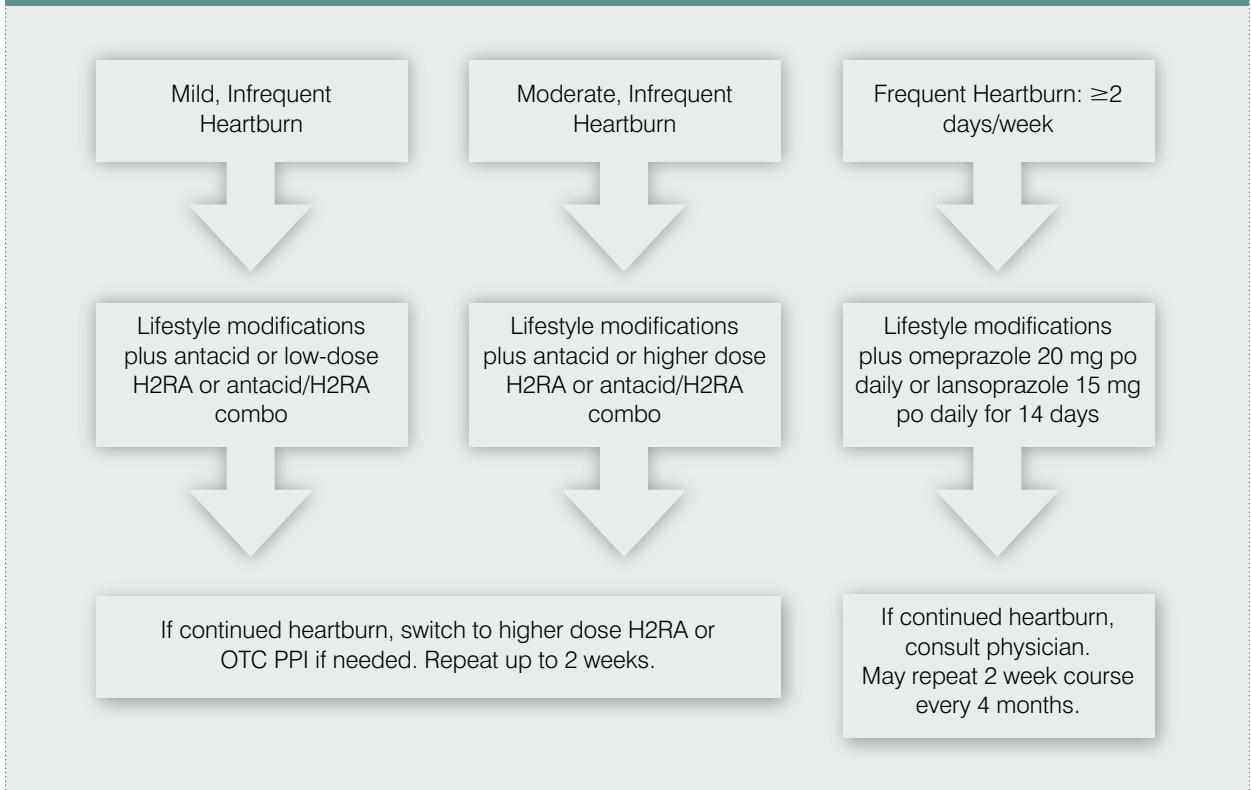
Adverse Effects

Due to the chemical reaction of the salt with the hydrochloric acid of the stomach, some antacids can produce CO₂, which will in turn increase intragastric pressure, and increase TLESRs. For this reason, some combination antacid products also contain simethicone. Antacid products that contain aluminum or calcium can cause constipation, and products that contain magnesium salts can cause diarrhea.

Drug Interactions

Antacids can reduce the bioavailability of drugs like fluoroquinolones and tetracycline due to adsorption. Drugs such as ferrous sulfate that require an acidic environment to function, interact with antacids due to alteration of gastric pH.

Figure 1. Algorithm for Non-Prescription Treatment of GERD



Dosing

Dosing and maximum daily doses are generally product specific, but their purpose is to be used only as needed. Antacids are indicated for treatment of occasional heartburn.

Contraindications

Antacids containing aluminum or magnesium, when given to patients with renal impairment, can accumulate, and should be avoided. Additionally, antacids with sodium bicarbonate should be avoided in patients with hypertension or congestive heart failure who are sodium restricted.

Use in Pregnancy

During pregnancy, women are more likely to suffer GERD symptoms due to hormone changes and a growing uterus, causing the LES to relax more often. In these patients, calcium containing antacids are first line treatment, though products with aluminum and magnesium should be avoided.

HISTAMINE 2 RECEPTOR ANTAGONISTS

H2RAs are available as both non-prescription and prescrip-

tion products, based on their strengths. They work by competitively and reversibly blocking parietal cell histamine2 receptors, which stimulate gastric acid production. This blockade decreases basal and meal stimulated acid secretion and increases the pH of the refluxate. However, acid suppression with H2RAs is about 70 percent, compared with 97 percent with PPIs, so they are less effective in healing esophagitis.

Peak plasma concentration of H2RAs occurs within one to three hours. A single dose inhibits acids secretion for anywhere from four to eight hours. The effect of H2RAs on acid secretion is much more pronounced and effective when they are taken in the evening or before bed. Many studies have shown that the H2RAs as a class have similar efficacy, and can be recommended interchangeably.

Available Dosage Forms/Products

See Table 4 for commercially available non prescription H2RAs. The non prescription strengths available are half that of the prescrip-

Table 5. Medication Selection and Patient Counseling Guide

Class	Name	Treatment/Prevention?	Onset/Duration	Dose	Notes
Antacids	Tums (CaCO ₃)	Treatment	Short onset/Short duration	1–2 tabs po (chewed) Q2 hrs PRN	<ul style="list-style-type: none"> • chewable tabs should be followed with water • pts may need gas relief as well
	Mylanta (Al(OH) ₃ , Mg(OH) ₂ , simethicone)			2 to 4 tsp po Q4–6 hrs PRN	
H2RAs	Pepcid (famotidine)	Treatment and Prevention	Medium onset/Medium duration	10 mg 20 mg po BID PRN	<ul style="list-style-type: none"> • take 15 to 60 min before offending foods for prevention • use only PRN
	Zantac (ranitidine)			75 mg 150 mg po BID PRN	
	Axid (nizatidine)			75 mg 150mg po BID PRN	
	Tagamet (cimetidine)			200 mg po BID PRN	
Antacid + H2RA	Pepcid Complete and Tums Dual Action (famotidine 10 mg/CaCO ₃ 800 mg/Mg(OH) ₂ 165 mg)	Treatment and Prevention	Short onset/Medium duration	1 tab po (chewed) BID PRN	<ul style="list-style-type: none"> • should be followed with water • do not exceed 2 tablets in 24 hours
PPI	Prilosec OTC	Prevention	Long onset/Long duration	20 mg po QAM	<ul style="list-style-type: none"> • should only be taken in AM • can be taken w/antacids and H2RAs • takes a few days to start working initially
	Prevacid 24 HR (lansoprazole)	Prevention		15 mg po QAM	

tion strengths of the medications. Additionally, combination products are available that contain calcium carbonate and magnesium hydroxide as antacids, as well as famotidine 10 mg in a chewable tablet. This provides for the fast onset of an antacid along with the longer duration of an H2RA.

Adverse Effects

Non-prescription H2RAs have few side effects,

the most common being headache, constipation, and diarrhea, and are considered to be very safe.

Drug Interactions

H2RAs are metabolized via CYP450, so caution should be used in patients taking medications also metabolized through this pathway, as drug interactions may occur. Cimetidine, in particular, has several drug interactions with many commonly prescribed medications. These include warfarin, phenytoin, propranolol, calcium channel blockers, chlorthalidone, and

diazepam, metronidazole, lidocaine, theophylline, and some tricyclic antidepressants. Due to these serious drug interactions, cimetidine is less frequently recommended.

Dosing

H2RAs can be taken up to twice a day, as shown in Table 4, due to their duration of action. Many experts agree that tolerance to H2RAs builds around seven to 14 days, so daily scheduled dosing is not effective. Self treatment with H2RAs should not exceed 14 days. It is appropriate for H2RAs to be taken on an as needed basis. Because of the onset of action of H2RAs, taking them for treatment of heartburn is not ideal, but they still carry this indication as their duration is much longer than that of antacids. H2RAs are also indicated for prevention of heartburn, allowing the patient to take one as a single dose one hour before a meal known to cause heartburn.

Dose Adjustment

As H2RAs are hepatically metabolized and excreted in the urine, dose reductions are necessary in patients with hepatic or renal dysfunction. These patients should consult with their physician before starting an H2RA.

PROTON PUMP INHIBITORS

As PPIs have become available without a prescription, their use will likely become more common, as is the case with H2RAs and antacids. PPIs have continually been shown to be more effective at both symptom control and healing of esophagitis than H2RAs.

PPIs irreversibly inhibit hydrogen potassium adenosine triphosphatase ($H^+-K^+-ATPase$), which is the acid producing "proton pump" of the gastric parietal cells. The profound inhibition that PPIs provide leads to a significantly longer duration of action compared to H2RAs, allowing for once daily dosing.

Omeprazole and lansoprazole, both available without a prescription as Prilosec OTC and Prevacid 24HR respectively, provide acid suppression that increases with continued dosing. A 20 mg dose of omeprazole can inhibit acid secretion by 65 percent after four to six hours, which decreases to 25 percent after 24 hours. After four to six doses of omeprazole, acid inhibition increases and then plateaus. Also, omeprazole is unique in that its bioavailability increases with continued dosing. With a single dose, bioavailability is about 35 percent, but increases to

60 percent with subsequent doses. Similarly, a 15 mg dose of lansoprazole resulted in an intragastric pH of greater than 4.0 for 22 percent of the time on the first day. By the fifth day, intragastric pH was greater than 4.0 for 49 percent of the time. Continued dosing of lansoprazole does not affect its bioavailability, which is about 80 percent. However administration 30 minutes before food does decrease its bioavailability.

Patients who present to the community pharmacy with uncomplicated, typical GERD symptoms two or more times a week should start a PPI. FDA labeling of the non prescription PPIs is very specific regarding how long a patient may take them. According to both packages of Prilosec OTC (omeprazole) and Prevacid 24HR (lansoprazole), they can be taken once daily for 14 days, then discontinued. This 14 day regimen can be repeated as needed every four months.

A suggested plan for the patient treated with non prescription PPIs is suggested by Haag and colleagues, as a response to their increasing availability. A patient with typical symptoms should start non prescription PPI therapy and continue for two weeks. At the end of the two week treatment, if the patient's symptoms persist, then referral to the physician is necessary for further evaluation. If the patient's symptoms have resolved, then there is no need to continue the PPI. If, after four months, the patient experiences a relapse of symptoms, then a two week course can be repeated. If the patient has frequent relapses, or begins to develop alarm symptoms at any time, then physician referral is essential.

Available Products

Table 4 lists the available non prescription PPIs.

Adverse Effects

Headache and diarrhea are the most commonly reported side effects, though PPIs are generally very well tolerated. Long term use of PPIs has been linked to serious adverse effects, such as increased risk of skeletal fractures and community acquired pneumonia. These effects are

limited to long term use and should not be a concern with short term self treatment of GERD.

Drug Interactions

Omeprazole interacts with phenytoin, diazepam, the R isomer of warfarin, antipyrine and aminopyrine by inhibiting their metabolism. In November 2009, the FDA issued an alert regarding decreased efficacy of clopidogrel (Plavix) when taken with omeprazole. This is theoretically due to omeprazole's inhibition of CYP2C19, which prevents the conversion of clopidogrel to its active metabolite, thus decreasing its effect on platelets. Patients taking clopidogrel should avoid omeprazole, and some studies suggest this is a class effect. These patients should check with their physician before starting any PPI. Lansoprazole has been shown to increase the metabolism of theophylline by 10 percent. Both PPIs may affect the absorption of certain medications that rely on an acidic environment to function, such as ketoconazole.

Dosing

Dosing of the non-prescription PPIs can be found in Table 4. It is important to counsel the patient to take his or her PPI first thing in the morning, at least 30 minutes before breakfast, which is when the PPI can optimally bind to the H⁺-K⁺-ATPase pumps. A study done in 2003 showed that only 36 percent of patients were not told by their physicians to take their PPI in the morning before a meal. This can lead to treatment failure, so it is important for pharmacists to convey this information when recommending a PPI to a patient.

CASES

Case No. 1

AB is a 30-year-old male who presents to the pharmacy counter, asking you for advice on what to take for his heartburn.

HPI: AB is currently having a heartburn episode, and is looking for relief. He was on his way home from dinner at a local sports bar and started to feel what he describes as "burning in my chest." He experiences episodes like this a couple of times a month, but

has never taken anything for it before. According to AB, the symptoms usually go away within a few hours. However, he needs to go to bed early this evening, and knows he won't be able to sleep with heartburn.

PSH:	tonsillectomy in 1990
PMH:	none
Meds:	multivitamin daily acetaminophen for headaches, takes one 500 mg tablet about 4 times/month
Allergies:	penicillin (rash)
FH:	father, 58, has HTN
SH:	Tobacco: Smokes about half a pack on weekends Alcohol: Drinks 2–3 alcoholic beverages 2–3 times per week Caffeine: Drinks three cups of coffee each morning
Diet:	Does not adhere to any diet
Exercise:	mostly weight training, three times per week
Weight:	85kg
Height:	6'0"

What counseling on lifestyle modifications would you give AB?

AB's social history indicates that he may be able to make some changes to prevent having more heartburn episodes than he currently has. Although he smokes only on the weekends, tobacco cessation has been shown to decrease esophageal acid exposure. Alcohol and coffee can both have an irritant effect on the esophageal mucosa, so decreasing consumption of both would be advised.

To address his current complaint, what would you recommend?

For AB's heartburn, there are a few valid options. First, an antacid would be appropriate for the fast relief he is seeking. Liquid antacids work slightly faster than chewable tablets, but are not usually convenient to take if the patient is not at home. Chewable antacids are easy to carry and easy to take. When followed with a glass of water, their onset of action is similar to that of a liquid antacid. As AB has no contraindications to aluminum or magnesium formulations, any brand will do. If AB would like to take a dose now, so that it can start working by the time he gets home, a chewable tablet would probably be the best choice.

Another possibility would be to recommend an H2RA for future heartburn. If AB can pinpoint what types of food in particular cause his heartburn, he can take a preventative H2RA before eating a meal. For example, if he meets his friends once a month for hot wings at a local sports bar, and he always ends up with heartburn, he can take an H2RA one hour before eating to prevent symptoms later.

Finally, as it has been shown that H2RAs work well for nocturnal heartburn, AB could take Pepcid Complete to ensure that he won't wake up in the middle of the night with symptoms. The antacid component would provide him with quick relief, and the famotidine component would continue to suppress acid production while he sleeps.

Case No. 2

KD is a 37-year-old female who presents to the pharmacy counter, asking you for advice on what to take for her heartburn.

HPI: KD has been having heartburn episodes more frequently of late. Currently, she states she has had heartburn episodes about two to three times a week for the last three weeks. She feels as though it is interfering with her sleep, as well as work, as she finds it hard to concentrate with heartburn. She doesn't notice that her heartburn occurs at any particular time of day, but has stopped drinking soda pop because she felt her symptoms were worse when she was drinking it. She called her physician, who told her to try something at the pharmacy for a few weeks and then come in. This week, she has been taking Tums, which help for a short time, but then the heartburn returns.

PSH: none
PMH: uterine fibroids
Meds: ibuprofen 600 mg Q6H prn menstrual pain, takes 4–8 doses/month
Loestrin 1/20 daily
Allergies: None
FH: mother, 63, has diabetes
father, 64, has hyperlipidemia
SH: Tobacco: denies
Alcohol: Drinks 2 alcoholic beverages 3 to 4 times per month
Caffeine: Drinks 1 cup of tea each morning
Diet: Does not adhere to any diet, but watches sugars and fats

Exercise: Walks ~2 miles every day
Weight: 65 kg
Height: 5'7"

What counseling on lifestyle modifications would you give KD?

KD has already started modifying what she drinks by discontinuing soda pop. In addition, she has a prescription dose of ibuprofen for menstrual cramps, which she takes four to eight times over the course of one or two days. KD should make sure she eats before taking each dose. Also, recommending acetaminophen for pain might also be an option. While KD does not drink frequently, limiting herself to one drink three to four times per month would be better. If KD finds that her heartburn interrupts her sleep in the future, elevating the head of the bed by adding blocks, would also help by encouraging the refluxate to travel downwards with the help of gravity.

To address her current complaint, what would you recommend?

KD's symptoms fit into a typical description of GERD, with no alarm or atypical symptoms that would necessitate immediate referral to her physician. She did say that she has tried Tums over the last week with no long lasting relief, so appropriate options for her would be an H2RA or a PPI for their longer durations of action. However, as she is having symptoms more than two times per week, and they seem to be interfering with her daily life and reducing her quality of life, a PPI would be the best option for her.

Either omeprazole 20 mg daily or lansoprazole 15 mg daily can be recommended to take for the next two weeks. KD should take the PPI first thing in the morning, at least 30 minutes before eating breakfast. She should also be sure to take the PPI daily, and not just for symptoms, as PPIs have been shown to have greater effects after about four days of continuous use. After two weeks, KD can discontinue the PPI, and re evaluate her symptoms. If she has found complete relief, then no further action is needed. If she finds her symptoms recur with

the same frequency, she can repeat a two week course of the PPI as long as it is four months after her previous treatment. If she continues to relapse, or if after her first two weeks of treatment, she finds she is still having symptoms, she should be referred back to her physician.

Case No. 3

SL is a 48-year-old male who currently takes a PPI, but is having breakthrough symptoms and presents to your pharmacy counter for a recommendation.

HPI: SL has been treated with a prescription PPI for the last two months, but over the last two weeks has noticed that he has heartburn one or two evenings a week, despite being compliant with his PPI. His physician is aware of his breakthrough symptoms, and suggested he try Tums. SL states that he does not like taking Tums because of their chalky taste, and wants to take something different. When you question him further, you find out that he gets home late from work and is so tired after eating dinner, that he tends to fall asleep laying on the couch at least a couple of times a week. It is usually those evenings that he wakes up with heartburn.

PSH: hernia repair 1996

PMH: GERD
hyperlipidemia

Meds: simvastatin 20 mg po daily
pantoprazole 40 mg po daily

Allergies: iodinated contrast dye shellfish

FH: father, 72, has diabetes
Mother, 70, had breast cancer, in remission

SH: Tobacco: denies
Alcohol: denies
Caffeine: used to drink 2 cups of coffee/day, but stopped 3 months ago

Diet: Adheres to a low fat diet and recently lost 10 pounds

Weight: 115 kg

Height: 5'9"

What counseling on lifestyle modifications would you give SL?

SL likely can't change his work schedule, but suggesting he get at least six to eight hours of sleep each night might prevent him from feeling so tired in the evenings. Recommending that SL not lay down within two to three hours after eating dinner will also help. Given his schedule, it might be better for him to eat a larger lunch and a lighter dinner, to avoid gastric distention late at night, and avoid him having to delay his bedtime. SL has already lost 10 pounds recently, due to changes in his diet, but recommending and encouraging continued weight loss will be beneficial not only to his GERD, but also to his cardiovascular health.

To address his current complaint, what would you recommend?

SL's breakthrough symptoms may be related to what he is eating for dinner or his evening activities, or a combination of the two. Since SL has already stated that he does not like Tums for their chalky taste, then chewable antacids can be eliminated as treatment possibilities. For patients objecting to the taste of chewable antacids, liquid antacids may be a viable treatment option. While H2RAs have a longer onset, they are still a viable option, especially because of their enhanced effect on nocturnal symptoms. Another option is to help SL identify particular foods that cause heartburn, such as spicy or acidic foods, and if he knows he'll be eating them for dinner, he can take an H2RA one hour before eating. Also, on evenings where SL is particularly tired and suspects he will fall asleep after dinner, he can take an H2RA before dinner. Additionally, though SL states he is compliant with his PPI, making sure that he is taking it 30 minutes before breakfast would be prudent.

CONCLUSION

Over the last 10 years, more medications for heartburn and GERD that were once prescription only have become non prescription. Now, with a second PPI available without a prescription, pharmacists must be prepared to identify, counsel, and appropriately refer patients with GERD. **ap**

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CONTINUING EDUCATION QUIZ

Select the correct answer.

- 1.** Gastroesophageal reflux can be considered a “disease” when:
 - a. The patient is experiencing extraesophageal symptoms.
 - b. The patient has esophageal damage.
 - c. The symptoms are bothersome to the patient and occur at least twice per week
 - d. The patient is experiencing alarm symptoms

- 2.** The American Gastroenterological Association’s position statement uses the word “troublesome” to differentiate GERD from what?
 - a. Non erosive reflux disease
 - b. Episodic heartburn
 - c. Barrett’s esophagus
 - d. Zollinger Ellison syndrome

- 3.** Patients who have symptoms of GERD without evidence of esophageal damage actually have:
 - a. Heartburn
 - b. Non erosive reflux disease
 - c. Strictures
 - d. Acid regurgitation

- 4.** Which of the following is true about strictures?
 - a. Was once the least common complication of GERD, but is becoming increasingly more prevalent
 - b. Is the least severe complication of GERD
 - c. Is considered a typical symptom of GERD
 - d. Due to wide use of PPIs, has become less prevalent than in the past

- 5.** The failure of what part of the antireflux barrier is the most common?
 - a. Lower esophageal sphincter
 - b. Peristalsis
 - c. Esophageal mucosa
 - d. Saliva

- 6.** Which of the following can increase intra-abdominal pressure and cause an increase in TLESRs?
 - a. Gastric distention
 - b. Obesity
 - c. Pregnancy
 - d. All of the above

- 7.** Of the following medications, which one does NOT cause a decrease in LES pressure?
 - a. Calcium Channel Blockers
 - b. Metoclopramide
 - c. Theophylline
 - d. Diazepam

- 8.** Of the following foods, which one causes an increase in LES pressure?
 - a. Chocolate
 - b. Peppermint
 - c. Protein
 - d. Fat

- 9.** Which of the following is considered an associated symptom, which a patient might present with along with heartburn and acid regurgitation?
 - a. Nausea
 - b. Lower GI complaints
 - c. Sleep disturbances
 - d. All of the above

10. What two criteria generally indicate that a patient is eligible for self-treatment of GERD?

i. Symptoms that occur in the post prandial period, ii Severe symptoms; iii Symptoms that are relieved quickly with antacids; iv Predominant epigastric pain

- a. i and ii
- b. ii and iii
- c. i and iii
- d. iii and iv

11. Which of the following is considered an alarm symptom, indicating that the patient needs to be referred to their physician?

- a. Hematemesis
- b. Dysphagia
- c. Melena
- d. All of the above

12. Which of the following is a typical symptom of GERD?

- a. Chest pain
- b. Regurgitation into the oropharynx
- c. Belching
- d. Sore throat

13. NSAIDs should be avoided in patients with GERD because of their ability to:

- a. Irritate the esophageal mucosa
- b. Increase LES pressure
- c. Decrease LES pressure
- d. Cause gastric distention

14. Caffeinated soda should be avoided in patients with GERD because of its ability to:

- a. Irritate the esophageal mucosa
- b. Increase LES pressure
- c. Decrease LES pressure
- d. A and C

15. Patients who experience symptoms at night could try which of the following lifestyle modifications?

- a. Elevating the head of the bed
- b. Avoid eating within three hours of laying down
- c. Eat smaller, more frequent meals to avoid gastric distention
- d. All of the above

16. Antacids are appropriate for:

- a. Prevention of heartburn
- b. Treating mild to moderate GERD symptoms
- c. Treating breakthrough symptoms while taking other medications for GERD
- d. B and C

17. Bioavailability of which of the following medications is NOT affected by concurrent use of antacids?

- a. Ortho-TriCyclen
- b. Levaquin
- c. Tetracycline
- d. Ferrous sulfate

18. Which of the following antacids is safe for pregnant women to take?

- a. Aluminum hydroxide
- b. Magnesium hydroxide
- c. Calcium carbonate
- d. Aluminum phosphate

19. H2RAs block parietal cell histamine2-receptors, resulting in:
- Decreased basal acid secretion
 - Decreased meal stimulated acid secretion
 - Increase in gastric pH
 - All of the above

20. Which of the following statements is NOT true regarding H2RAs?
- Peak plasma concentration occurs within one to three hours after taking.
 - Acid suppression increases with subsequent dosing.
 - Acid suppression is more pronounced when taken in the evening.
 - The H2RAs all have similar efficacy.

Non-Prescription Self-Treatment of GERD

May 3, 2010 (expires May 3, 2013)

Activity Type: Knowledge-based

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 Last 4 digits of SSN MM-DD of birth

 Name

 Pharmacy name

 Address

 City State ZIP

 Phone number (store or home)

 Store e-mail (if avail.) Date quiz taken

Quiz: Shade in your choice

- | | a | b | c | d | e | | a | b | c | d | e |
|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-----|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| 3. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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| 7. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 17. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 18. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 19. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 20. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Quiz: Circle your choice

21. Is this program used to meet your mandatory C.E. requirements?
a. yes **b.** no
22. Type of pharmacist: **a.** owner **b.** manager **c.** employee
23. Age group: **a.** 21–30 **b.** 31–40 **c.** 41–50 **d.** 51–60 **e.** Over 60
24. Did this article achieve its stated objectives? **a.** yes **b.** no
25. How much of this program can you apply in practice?
a. all **b.** some **c.** very little **d.** none

How long did it take you to complete both the reading and the quiz? _____ minutes

