

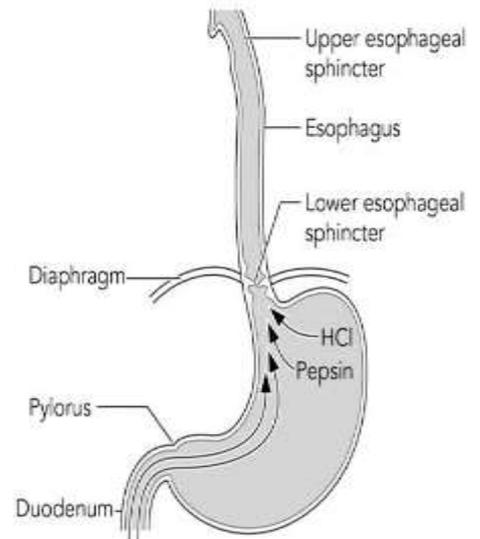
## Gastrointestinal conditions

### 4-Heartburn

#### Background

1-Gastro-esophageal reflux disease (GERD), also known as reflux esophagitis, and commonly called heartburn<sup>(1)</sup>. Symptoms of heartburn are caused when there is **reflux of gastric contents**, particularly acid, into the esophagus, which irritate the mucosal surface<sup>(2)</sup>.

2-Unlike the stomach lining, the esophageal mucosa has no protection against gastric acid and readily irritated by acid<sup>(1, 2)</sup>.



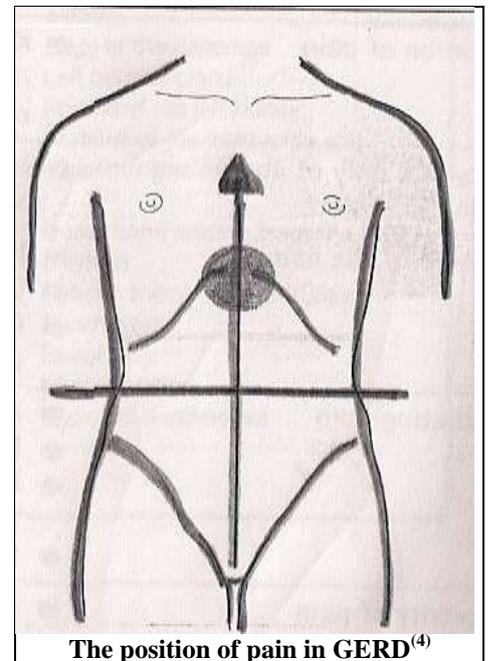
#### Patient assessment with GERD

##### 1-Signs and symptoms

The hallmark of typical symptom of GERD is heartburn<sup>(3)</sup> which is described as:

**A burning sensation** or pain experienced in the upper part of the stomach<sup>(2)</sup> (i.e. the lower chest<sup>(3)</sup>) in the Medline (epigastrium)<sup>(2)</sup>.

The burning feeling tends to move upwards behind the breastbone<sup>(2)</sup>. The pain may be felt only in the lower area or may be felt right up to the throat causing an acid taste in the mouth<sup>(2)</sup>. (Figure-1)<sup>(4)</sup>.



##### 2-Precipitating or aggravating factors.

Diagnosis of GERD can be helped greatly by asking about the Precipitating factors<sup>(2)</sup>. These are<sup>(2)</sup>:

- A-Bending or lying down (e.g. at night).
- B-Overweight.
- C-After large meal.
- D-Pregnancy (mechanical and hormonal influence).
- E-It can be aggravated or even caused by belching.

##### 3-Severity and location of pain:

Patient who have **severe pain** should be referred<sup>(3)</sup> as well as pain that radiate to the back and arm (possible heart attack)<sup>(2)</sup>.

##### 4-Difficulty in swallowing and regurgitation:

The sensation that food sticks as it is swallowed or it does not seem to pass directly into the stomach (**dysphagia**) is an indication for immediate referral<sup>(2)</sup>. (It may be due to obstruction of the esophagus for e.g. by tumor)<sup>(2)</sup>. **Regurgitation** can be associated with difficulty in swallowing. It occurs when recently eaten food sticks in the

esophagus and is regurgitated without passing into the stomach. This is due to a mechanical blockage in the esophagus-----referral <sup>(2)</sup>.

### 5-Age:

Heartburn is not normally experienced in childhood; therefore, **children** with symptoms of heartburn should be referred for further investigations <sup>(2)</sup>.

### 6-Medication: To know:

1-What had been tried to treat the condition (failed medication required referral) <sup>(2)</sup>.

2-Medications such as anticholinergics, nitrates, dihydropyridine calcium channel blockers, nonsteroidal antiinflammatory drugs, and tetracycline also are risk factors for GERD (Table-1) <sup>(5)</sup>.

Reduction of LES Pressure	Direct Irritation
Anticholinergics	Alendronate
Barbiturates	Aspirin
Caffeine	Iron
Dihydropyridine calcium channel blockers	NSAIDs
Dopamine	Potassium chloride
Estrogen, progesterone	Quinidine
Nicotine	
Nitrates	
Tetracycline	
Theophylline	

*LES: lower esophageal sphincter; NSAID: nonsteroidal anti-inflammatory drug.*

### Summary of Symptoms and circumstances for referral <sup>(2)</sup>

- 1-Failure to respond to antacids
- 2-Pain radiating to arms
- 3-Difficulty in swallowing
- 4-Regurgitation
- 5-Long duration
- 6-Increasing severity
- 7-Children

### Treatment timescale

If symptoms have not responded to treatment **after 1 week** the patient should see a doctor <sup>(2)</sup>.

### Management:

#### Non-pharmacological advices:

- 1-Eat **small and frequent meals** (to avoid distending the stomach) <sup>(2)</sup>.
- 2-The **evening meal is best taken several hours before going to bed** <sup>(2)</sup> (do not lie down for about 3 hours after eating <sup>(3)</sup> ).
- 3-Use **extra pillow** to elevate the head of the bed <sup>(2)</sup>.
- 4-Do **not wears tight fitting clothing** <sup>(3)</sup>. (Tight, constricting clothing, especially waistbands and belts, can be an aggravating factor and should be avoided) <sup>(2)</sup>.
- 5-**Avoid smoking, alcohol, caffeine** and foods that exacerbate symptoms of GERD <sup>(3)</sup>.
- 6-**Weight reduction** should be advised <sup>(2)</sup>.

### Pharmacological Therapy:

#### A-Antacids (AL salts, Mg salts, Ca-carbonate, Na-bicarbonate, ...):

#### Practical points:

##### 1-Best time for taking Antacids <sup>(2-4, 6)</sup>:

Antacids preferably taken **after food by about 1 hour** (because gastric emptying is slowed by food thus antacids remain in the stomach for prolonged time---acts for about 3 hours). [Although antacids may be taken on when-needed basis].

Taking antacids on an empty stomach -----rapidly emptied from the stomach -----short duration of action (< 1 hour)).

## 2-Dosage form <sup>(2-4)</sup>:

\*Antacid **suspensions** are more effective than tablets (of the same type and quantity) (because the acid neutralizing capacity and speed of onset is greater than tablet).

\*Patient should be instructed to chew the tablets thoroughly followed by a full glass of water to ensure maximum therapeutic effect.

\*It might be appropriate for the patient to have both; **tablet** antacid may be taken during a **day** at the **work** while **suspension** is taken at **home**.

## 3-Interactions:

**A**-Antacids can affect the **absorption of a number of drugs** (via chelation and adsorption) and the majority of these interactions are easily overcome by leaving a minimum gap of (1-2) hours between the doses of each drug <sup>(4)</sup>.

**B**-Antacids -----increase the PH of the stomach-----cause a premature release of enteric coated tablets or granules in the stomach rather than the intestine <sup>(7)</sup>.

## 4-Side effects of antacids <sup>(2)</sup>

**A**- AL-containing antacids tend to be **constipating**.

Mg-containing antacids tend to cause osmotic **diarrhea** and are useful in patients who are slightly constipated. Thus **combination** products of AL and Mg salts cause minimum bowel disturbances <sup>(2)</sup>.

**B**- Antacids containing sod. Bicarbonate should be avoided in patients if sodium intake should be restricted (e.g. in patient with CHF, hypertension,.....) <sup>(2)</sup> and during pregnancy <sup>(8)</sup>.

**C**-Calcium carbonate: It acts quickly, has a prolonged action and is a potent neutralizer of acid. It can cause **acid rebound** and, if taken over long periods at high doses, can cause **hypercalcaemia** and so should **not be recommended for long-term use**.

## **B-Alginates (Gaviscon ®):**

Alginate-containing Antacids form a **sponge –like matrix** that float on the top of the stomach contents <sup>(4)</sup>. Alginate-containing antacids can form a ‘raft’ that floats on the surface of the stomach contents to reduce reflux and protect the oesophageal mucosa <sup>(6)</sup>. Some alginate-based products contain sodium bicarbonate. If a preparation low in sodium is required, the pharmacist can recommend one containing potassium bicarbonate instead. Alginate products with low sodium content are useful for the treatment of heartburn in patients on a restricted sodium diet <sup>(2)</sup>.

## **Practical points:**

1-They are best given **after each main meal and before bedtime**. Although it may be taken on when-needed basis <sup>(4)</sup>.

2-They can be given in pregnancy and breastfeeding <sup>(4)</sup>.

## **C-Histamine 2 receptor antagonists (H2RA):**

**1**-They can be used for the short-term treatment of dyspepsia, hyperacidity and heartburn in **adults and children over 16 years** <sup>(2, 6, 7)</sup>.

**2-Duration for OTC H2RA:** Treatment with **OTC H2RA** is limited to a maximum of 2 weeks. The treatment limit is intended to ensure that patients do not continuously self-medicate for long periods <sup>(2, 6, 7)</sup>.

**3-When to take H2RA (regarding OTC use for GERD only):**

Patient can take 1 tablet when symptoms occur and if the symptoms persists, another tablet may be repeated after more than 1hour, but when food is known to precipitate symptoms, H2RA should be taken an hour before food<sup>(4)</sup>. (Table-2) <sup>(3, 6, 7)</sup>.

**Table-2: OTC H2RAs**

	<b>H2RA</b>	<b>OTC dosage form</b>	<b>Max. single dose</b>	<b>Max. daily dose</b>
<b>1</b>	<b>Cimetidine</b>	200 mg tablet	200 mg	800 mg
<b>2</b>	<b>Famotidine</b>	10 mg tablet	10 mg	20 mg
<b>3</b>	<b>Nizatidine</b>	75 mg tablet	75 mg	150 mg
<b>4</b>	<b>Ranitidine</b>	75mg tablet	75 mg	300 mg

**4-Side effects of H2RA:** Headache, dizziness, diarrhea and skin rashes have been reported as adverse effects but they are not common <sup>(2)</sup>.

**5-The OTC H2 antagonists** are not licensed for sale to pregnant or breastfeeding women <sup>(1, 7)</sup>.

**D-Proton pump inhibitors (PPIs):**

1-PPIs are amongst the most effective medicines for the relief of heartburn <sup>(2)</sup>. PPIs available OTC are:

United kingdom	<b>Omeprazole</b> (10 mg tablet), <b>Pantoprazole</b> (20 mg tablet) and <b>rabeprazole</b> (10 mg tablet) <sup>(2)</sup> .
USA	<b>Omeprazole</b> (20 mg capsule), <b>Lansoprazole</b> (15 mg capsule) and <b>esomeprazole</b> (20 mg capsule) <sup>(5)</sup> .

2- OTC PPIs can be used for the relief of **heartburn symptoms associated with reflux in adults** <sup>(2)</sup> **over 18 years** <sup>(6)</sup>. PPIs should not be taken (**as an OTC**) during **pregnancy** or whilst **breastfeeding** <sup>(2)</sup>.

3- Their duration of action is longer, but the time to onset is longer compared with, antacids, and H<sub>2</sub>RAs. It may take 1 to 4 days to achieve full symptom relief <sup>(5)</sup>. During this period a patient with ongoing symptoms may need to take a concomitant **antacid** <sup>(2)</sup>.

4-Treatment with OTC PPIs is limited to a maximum of **4 weeks** <sup>(6)</sup> (2 weeks in USA).This course of therapy must not be repeated more often than every 4 months <sup>(3, 9)</sup>.

5-OTC Doses of PPIs :

			<b>OTC Doses</b>
<b>USA</b>	<b>1</b>	<b>Esomeprazole</b> (20 mg capsule)	Single dose each day before breakfast for 14 days <sup>(5)</sup> .
	<b>2</b>	<b>Lansoprazole</b> (15 mg capsule)	Single dose each day before breakfast for 14 days <sup>(5)</sup> .
	<b>3</b>	<b>Omeprazole</b> (20 mg capsule)	Single dose each day before breakfast for 14 days <sup>(5)</sup> .
<b>UK</b>	<b>1</b>	<b>Omeprazole</b> (10 mg tablet)	The initial dose is two 10 mg tablets (i.e. 20 mg) once daily, swallowed whole before a meal, with plenty of liquid, until symptoms subside. Thereafter, a dose of 10 mg once daily can be taken, increasing to 20 mg if symptoms return. If no relief is obtained within 2 weeks, or if continuous treatment for more than 4 weeks is required to relieve symptoms, the patient should be referred to their doctor <sup>(7)</sup> .
	<b>2</b>	<b>Pantoprazole</b> (20 mg tablet)	Single dose each day before breakfast <sup>(6)</sup> .
	<b>3</b>	<b>Rabeprazole</b> (10 mg tablet)	Single dose each day before breakfast <sup>(4)</sup> .

## 6-Drug-interaction of PPIs:

يمكن الرجوع إليها في الـ BNF ولكن يرجى الانتباه إلى ما يلي:

**PPIs-Clopidogrel drug interaction:** esomeprazole and omeprazole reduce antiplatelet effect of clopidogrel; lansoprazole, pantoprazole and rabeprazole **possibly** reduce antiplatelet effect of clopidogrel <sup>(6)</sup>.

ولا يزال هذا التداخل (المحتمل) محل جدل بين مثبت لأهميته السريرية وبين ناكراً لها .

## References:

- 1-Nathan A. fasttrack. Managing Symptoms in the Pharmacy. Pharmaceutical Press; 2008.
- 2-Symptoms in the pharmacy . A guide to the managements of common illness. 7th edition By Alison Blenkinsopp and Paul Paxton .2014.
- 3-Handbook of Non-prescription drugs: An Interactive Approach to Self-Care. 16<sup>th</sup> edition: 2010.
- 4-Community Pharmacy. Symptoms, Diagnosis and Treatment.By Paul Rutter. 3<sup>rd</sup> edition. 2013.
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- 9-W. Steven Pray. Updates in Nonprescription Therapy for Heartburn and GERD . US Pharm. 2009;34(10):52-55.

## 5-Indigestion

Indigestion (dyspepsia) is commonly presented in community pharmacies and is often self-diagnosed by patients, who use the term to include anything from pain in the chest and upper abdomen to lower abdominal symptoms. Many patients use the terms indigestion and heartburn interchangeably <sup>(1)</sup>.

However, Heartburn should not be confused with dyspepsia. The discomfort of dyspepsia is variably described as a **pain, distension**, or feeling of **fullness**, but is **generally not burning in nature** <sup>(2)</sup>.

## Significance of questions and answers

### 1-Age

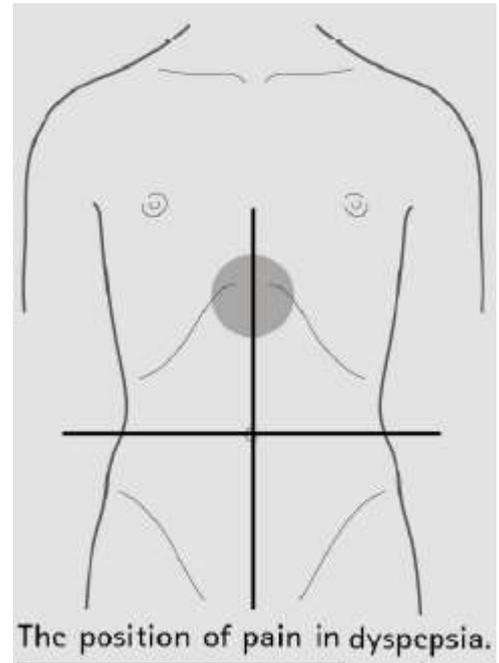
Indigestion is **rare in children**, who should be **referred** to the doctor. Be cautious when dealing with **first-time indigestion** in patients **aged 45 years or over** and **refer** for a diagnosis <sup>(1)</sup>.

### 2-Symptoms

The symptoms of typical indigestion include poorly localized **upper abdominal discomfort**, which may be brought on by particular foods, excess food, or medication (e.g. aspirin) <sup>(1)</sup>.

### 3-Duration/previous history

Indigestion that is **persistent** or **recurrent** should be **referred** to the doctor. Any patient with a previous history of the symptom which has **not responded to treatment**, or which has **worsened**, should be **referred** <sup>(1)</sup>.



### 4-Diet and Smoking habit

**Fatty foods and alcohol** can cause indigestion, aggravate ulcers and precipitate biliary colic. **Smoking** predisposes to, and may cause, indigestion and ulcers. The pharmacist is in a good position to offer advice on smoking cessation, perhaps with a recommendation to use nicotine replacement therapy <sup>(1)</sup>.

### 5-Details of pain/associated symptoms

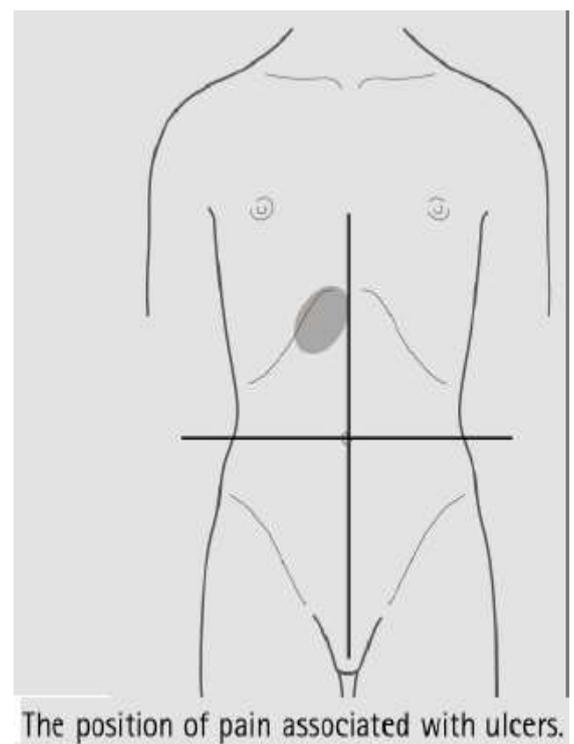
A few medical conditions that may present as indigestion described below:

#### A-Ulcer

Ulcers may occur in the stomach (gastric ulcer) or in the first part of the small intestine (duodenal ulcer).

Typically the pain of a **duodenal ulcer** is localized to the upper abdomen, slightly to the right of the midline. It is often possible **to point to the site of pain with a single finger**. The pain is most likely to occur when the **stomach is empty, especially at night**. It is relieved by food and antacids.

The pain of a **gastric ulcer** is in the same area but **less well localized**. It is often **aggravated by food and may be associated with nausea and vomiting**. Appetite is usually reduced and the symptoms **are persistent and severe** <sup>(1)</sup>.



## B-Gallstones

Single or multiple stones can become temporarily stuck in the opening to the bile duct as the gall bladder contracts. This causes **severe pain (biliary colic)** in the upper abdomen below **the right rib margin**. Sometimes this pain can be confused with that of a duodenal ulcer. Biliary colic may be precipitated by a **fatty meal** <sup>(1)</sup>.

## C-Gastro-Esophageal reflux

The symptoms are typically described as **heartburn** arising in the upper abdomen passing upwards behind the breastbone. It is often precipitated by a large meal or by bending and lying down <sup>(1)</sup>.

## D-Irritable bowel syndrome

Irritable bowel syndrome (IBS) is a common condition in which symptoms are caused by colon spasm. There is usually an alteration in bowel habit, often with alternating constipation and diarrhea. The diarrhea is typically worse first thing in the morning <sup>(1)</sup>.

## E- Myocardial ischemia

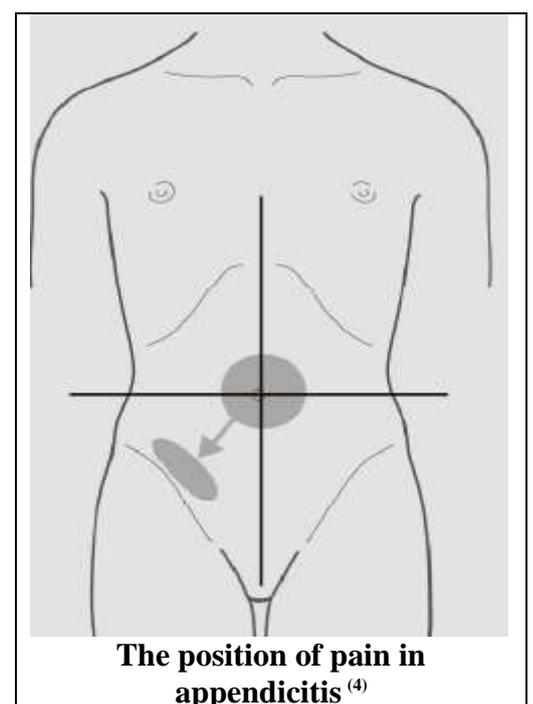
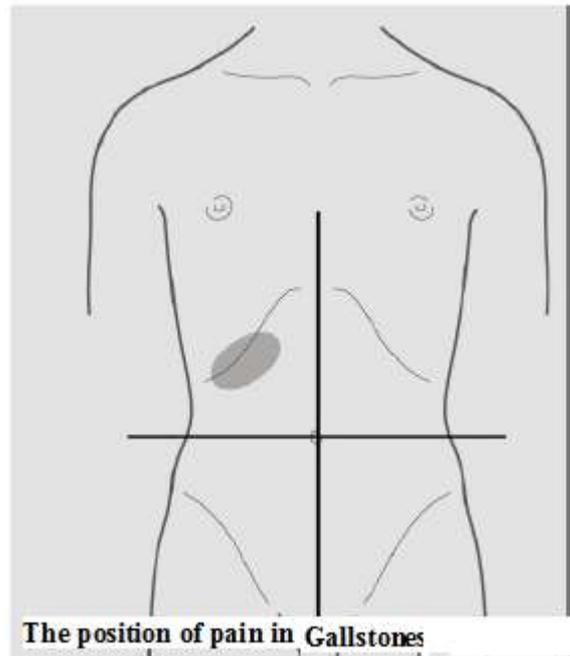
The pain is likely to be **precipitated by exercise** or exertion and it **radiates** to jaw, neck, shoulder, arm. Not all cases of angina have classical presentation Patients can complain of dyspepsia-like symptoms and feel generally unwell (*Atypical angina*). These symptoms might be brought on by a heavy meal. In such cases antacids will fail to relieve symptoms and referral is needed <sup>(3,4)</sup>.

## F-Appendicitis

Starts **centrally** and radiates to **right iliac fossa** after some time <sup>(3)</sup>.

## G-More serious disorders

Persisting upper abdominal pain, especially when associated with **anorexia** and unexplained **weight loss**, may herald an underlying **cancer** of the stomach or pancreas. Ulcers sometimes start bleeding, which may present with blood in the vomit (**haematemesis**) or in the stool (**melaena**). In the latter the stool becomes tarry and black. **Urgent referral** is necessary. <sup>(1)</sup>



## 6-Medication

**A-Medicines already tried:** Anyone who has tried one or more appropriate treatments without improvement or whose initial improvement in symptoms is not maintained should see the Doctor <sup>(1)</sup>.

**B-Other medicines being taken:** Gastrointestinal (GI) side-effects can be caused by many drugs. NSAIDs have been implicated in the causation of ulcers and bleeding ulcers. Sometimes these drugs cause indigestion. **Elderly** patients are particularly prone to such problems and pharmacists should bear this in mind. **Severe or prolonged indigestion in any patient taking an NSAID is an indication for referral** <sup>(1)</sup>.

### Summary of Symptoms and circumstances for referral <sup>(1, 3)</sup>:

1-Age over 45 years if symptoms **develop for first time**.

2-Symptoms are persistent or recurrent.

3-Pain is severe.                      4-Blood in vomit or stool.      5-Pain worsens on effort.

6-Persistent vomiting.      7-Treatment has failed.      8-Adverse drug reaction is suspected.

9-Associated weight loss.      10-Children.      11- Indigestion between meals or at night.

12-Pain radiating from central or epigastric areas.

### Treatment timescale

If symptoms have not improved **within 5 days**, the patient should see the doctor <sup>(1)</sup>.

## Management

Smoking, alcohol and fatty meals can all aggravate symptoms, so the pharmacist can advise appropriately <sup>(1)</sup>.

### A-Antacids: as in GERD

### B-Famotidine and ranitidine: as in GERD.

**C-Dimeticone (dimethicone):** Dimeticone is sometimes added to antacid formulations for its defoaming properties. Theoretically, it reduces surface tension and allows easier **elimination of gas** from the gut by passing flatus or belching. **Evidence of benefit is uncertain** <sup>(2)</sup>.

### D-Domperidone

Domperidone 10 mg previously was used as an OTC for the treatment of **postprandial stomach symptoms** of excessive fullness, nausea, epigastric bloating and belching, occasionally accompanied by epigastric discomfort and heartburn. It increases the rate of gastric emptying, and also increases the strength of contraction of the esophageal sphincter <sup>(1)</sup>. However **domperidone was reclassified as POM at September 2014**. The move is triggered by concerns that domperidone was associated with a small increased risk of serious cardiac side effects.

## References:

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