

Potential Causes of Dyspepsia		3 categories of Gastritis (cont)		The Oesophagus		The Oesophagus (cont)	
Dyspepsia	A non specific term, encompasses a number of symptoms attributable to the upper GI tract.	Type C - CHEMICAL	Chemicals/drugs eg aspirin. Elevated acid secretion	The mucosa of the oesophagus is non-keratinized stratified squamous epithelium		Adventitia replaces serosa.	Serosa = a slick covering that helps organs move smoothly (like the outer wrap of your intestines). Adventitia = a rougher outer layer that holds the organ in place, usually found where organs are attached to other tissues (like parts of the esophagus or rectum). Meaning that part of the organ is not freely moving inside a cavity anymore, but rather fixed or connected to surrounding structures.
Oesophagitis	Gastro oesophageal reflux disease (GORD). Barrett's oesophagus	Diet & Lifestyle & Other drugs		The type of muscle in the muscularis of the oesophagus varies by region	the superior 1/3 is skeletal muscle, the intermediate 1/3 is skeletal and smooth muscle, the inferior 1/3 is smooth muscle.		
Gastritis	Type: A,B,C	Other causes of Dyspepsia					
Peptic Ulcers	Gastic ulcers. Duodenal ulcers	Caffeine:	PDE inhibitor promotes acid secretion	Alcohol:	Dissolves mucous layer		
Zollinger-Ellison syndrome	a rare condition caused by tumors (gastrinomas) that produce excessive gastrin, leading to overproduction of stomach acid and peptic ulcers.	Spicy Food:	Capsaicin, Activates TRPV1 but may inhibit acid secretion via vagal inactivation.	Concomitant medication (drugs that can relax LOS):	PDEV inhibitors eg sildenafil like drugs. Nitrates (relaxes LOS via PDE activation). Theophylline (Relaxes LOS via PDE inhibition). Drugs with antimuscarinic properties (block muscarinic receptors). Ca2+ channel blockers (prevent calcium entry).	Type A Gastritis	
Gastric Cancer		Obesity and pregnancy	increased intra-abdominal pressure causing reflux.				
3 categories of Gastritis		Type A - AUTOIMMUNE		Type B - BACTERIAL		Destruction of parietal cells	
		(antibodies against parietal cells). Reduced or no acid secretion and intrinsic factor. Aplastic anaemia due to Vit B12 deficiency.		<i>Helicobacter pylori</i> infection. Elevated acid secretion		Reduced or absent acid secretion. Vitamin B12 deficiency. Anaemia	



Type A Gastritis (cont)

Other conditions associated with Type A Gastritis	Autoimmune thyroiditis (Hashimoto's disease). Type I Diabetes. Addison's Disease (Adrenal glands, reduced cortisol & aldosterone). Vitiligo (skin pigmentation disorder) white patches of skin.
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Treatment potentially required	Hydroxocobalamin injections
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Type C Gastritis - Chemical, Drug and Diet

SAID's	Steroidal anti-inflammatory drugs (SAID's) inhibit phospholipase A2 by promoting expression of annexin 1 and suppressing expression of COX-2.
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NSAID's	Non-steroidal anti-inflammatory drugs inhibit the cyclo-oxygenase enzymes. COX-1 COX-2
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Barrett's Oesophagus

Long-standing reflux of acid
<i>About 1 in 10 people with GORD develop Barrett's oesophagus.</i>
Normal stratified squamous epithelium is replaced with simple columnar epithelium with goblet (mucus cells)

Acid Secretion

M3 and CCK2 (CCKB; gastrin) receptors	GTP-binding protein coupled receptor (GPCR). Linked to Gq (stimulates Phospholipase C). Increases intracellular Ca ²⁺ via PIP2 conversion to DAG & IP3.
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H2 receptors	GTP-binding protein coupled receptor (GPCR) Linked to Gs (stimulates adenylate cyclase) Increases intracellular cAMP
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Inhibit or Reduce acid secretion:	Proglumide, Misoprostol, H2 Blockers, Atropine, Proton Pump Inhibitors.
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Type B Gastritis - Helicobacter pylori

Associated with:	80% of gastric ulcers. 95-100% of duodenal ulcers. 100% chronic antral gastritis. gastric cancer (younger infected, greater chance)
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Gram negative spiral bacterium	colonises mucus in both stomach and duodenum.
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Type B Gastritis - Helicobacter pylori (cont)

Secretes	urea from high urease activity (antral pH raised, gastrin & acid secretion increases). PAF (platelet activating factor).
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Gram negative	Doesn't retain Crystal Violet stain! - Pink stain!!!
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Eradication of H.pylori

First Line treatment	ONE WEEK TWICE DAILY Amoxycillin 300mg and either Clarithromycin 500 mg or Metronidazole 400 mg and either omeprazole 20 mg or lansoprazole 30 mg.
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Consider lowest acquisition costs and previous exposure to clarithromycin or metronidazole!

If allergic to penicillin ONE WEEK TWICE DAILY	Clarithromycin 500 mg Metronidazole 400 mg and either Omeprazole 20 mg or lansoprazole 30 mg
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Eradication of H.pylori (cont)

If allergic to penicillin and previous exposure to clarithromycin and metronidazole ONE WEEK TWICE DAILY	Tetracycline 1g and metronidazole 400 mg. Bismuth subsalicylate and omeprazole 20 mg
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Mucosa aggressors and protectors

Protective	Mucus, Prostaglandins, Bicarbonate, Mucosal blood flow
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Aggressive	Acid, Pepsin, NSAID's, <i>H. pylori</i> , Drugs, Diet
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Treatment for Dyspepsia

Surgery (1900--1970's)	Gastric vagotomy & antacids
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Drugs (1970's onwards)

Barriers/-Protection:	Alginate and Sucralfate-antacid and barrier
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Muscarinic cholinergic receptor antagonists (M3)	Pirenzepine
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Selective H2 receptor antagonists	Cimetidine, ranitidine, famotidine
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Drugs (1990's onwards)

Proton Pump Inhibitors	Omeprazole, Pantoprazole, Lansoprazole, Rabeprazole and Esomeprazole
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protecting gastric mucosa when taking NSAID's

Synthetic PGE2 Misoprostol + NSAID. Problem – smooth muscle relaxation – diarrhoea.

Antacids Inhibit acid secretion: H2 antagonists eg: TUMS, famotidine. **Rennie.** Proton Pump Inhibitors (PPI's) eg omeprazole, lansoprazole, esomeprazole, pantoprazole.

Selective COX-II inhibitors Diclofenac, refocoxib (Vioxx)

Emerging novel NSAIDS (not clinically used) NO-flurbiprofen (nitric oxide releasing derivatives). H2S releasing NSAID's (currently awaiting MAA)



By **MJC3**
cheatography.com/mjc3/

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