

**Pathophysiology**

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### **Introduction**

Sometimes babies may have immature (Gastrointestinal) GI tracts leading to physiology reflux in the course of adapting to life outside the uterus. Parents often miss in considering this possibility, and get prompted for changing formulas instead of seeking medical care. In the given case, it was difficult to identify GI alterations as most of them cause similar symptoms. Similar issues arise with adults who present with symptoms having different potential causes. Hence, it is crucial for the advanced practice nurses that they have adequate knowledge about the types of questions needed to be asked for obtaining the accurate information for diagnosis. For this reason, they need to have a clear understanding of common GI disorders like gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), and gastritis. The aim of this essay is to identify the normal pathophysiology of gastric acid stimulation and production and describing similarities and differences in GI disorders. Additionally, the essay also analyses the impact of one of the patient factors, such as genetics, gender, ethnicity, age, and behaviour, on the pathophysiology of GERD, PUD, and gastritis and reflects on the ways of diagnosing and prescribing treatment of these disorders for a patient based on the selected factor. Finally, the essay presents a mind map for gastritis considering the epidemiology and clinical presentation of gastritis.

### **Identification of the normal pathophysiology of gastric acid stimulation and production**

Inhibition of acid secretion cause acute infections leading to hypochlorhydria (Sachsa, Prinz, Loo, Bamberg, Besancon, & Shin, 1994). Pepsin secretions and gastric acid are resultant of interplay of neuro-hormonal factors with inhibitory and stimulatory actions on oxyntic glands (Konturek, 2004). In chronic infections the stomach has hyperchlorhydria or hypochlorhydriadepending on the location and severity of involvement. Most of the patients

suffer from pangastritispan gastritis caused by lesser production of normal acid. 12% of the infected have an antral dominant infection with inflammation. In this infection, the production of acid secretion increases caused by increased gastrin and reduced amount of Somatostatin. The patients suffering from this infection are predisposed for developing a duodenal ulcer. Organismeradication normalizesSomatostatin, acid, and gastrin (Sachsa, Prinz, Loo, Bamberg, Besancon, & Shin, 1994).

**Similarities and differences between the pathophysiology of gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), and gastritis**

The similarities and differences between the pathophysiology of gastroesophageal reflux disease (GERD), peptic ulcer disease (PUD), and gastritis are presented in the table below:

| <b>Gastroesophageal reflux disease (GERD)</b>   | <b>Peptic ulcer disease (PUD)</b>   | <b>Gastritis</b>  |
|---|---|---|
| Gastro-oesophageal reflux disease refers to a condition provoked by thereflux of gastric contents into the oesophagus leading to complications or symptoms, which impair quality of life. | Gastric and duodenal ulcers refer to breaks in the duodenal and gastric mucosa.                     |   |
| Typical symptoms of this disease include regurgitation and heartburn, but it is also related to extra-oesophageal   | Both are related to the corrosive action of hydrochloric acid and pepsin on the mucosa of the upper | Gastritis is the result of multifactorial gastric mucosal injury. |

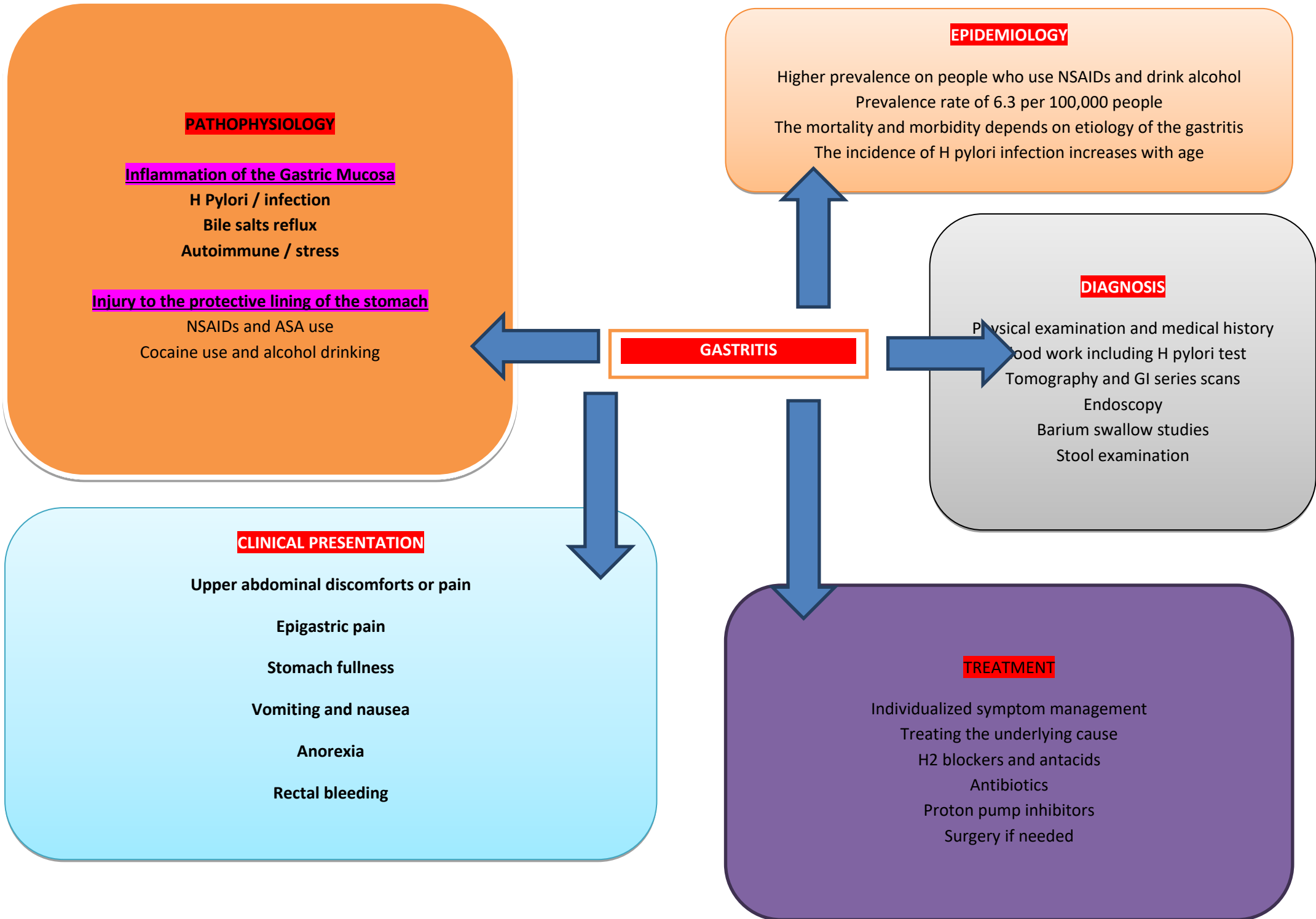
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| <p>manifestation like asthma, Laryngitis and chronic cough.</p>  | <p>gastrointestinal tract.</p>   |   |
| <p>The pathogenesis of this disease is multifactorial, which involves transient lower oesophageal sphincter relaxation as well as other lower oesophageal sphincter pressure abnormality. It leads to occurrence of reflux of bile, acid, pancreatic and pepsin enzymes, which are responsible for oesophageal mucosal injury.</p> | <p>Ulcers range from 3 mm to several cm in diameter. Symptoms include pain or nausea and abdominal discomfort in the epigastrium.</p>  | <p>Gastritis is primarily caused by <i>Helicobacter pylori</i> (Hp). The chronic atrophic corpus gastritis (CAG) is the main cause of gastric cancer (GC) and gastric ulcer.</p>  |
| <p>Factors responsible for the pathophysiology of this disease include impaired oesophageal clearance, hiatal hernia, impaired mucosal defensive factors and delayed gastric emptying (De Giorgi, Palmiero, Esposito, Mosca, &amp; Cuomo, 2006).</p>   | <p>Use of antacids provides temporary relief. It is a misconception that “No gastric acid, no peptic ulcer”. One of the important factors in the pathogenesis of peptic ulcer is excessive gastric acid secretion (Sachsa, Prinz, Loo,</p> | <p>The cases of GC are substantially higher in East Asia than any other part in the world. The characteristic differences in pathophysiology is one of the reasons of higher cases in the East compared to the West (Wirth &amp; Yang, 2016).</p> |

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|  | Bamberg, Besancon, & Shin,<br>1994). |  |
|--|--------------------------------------|--|

### **Impact of a patient factor on the pathophysiology of GERD, PUD, and gastritis**

Out of the various patient factors, age is the most crucial factor which has crucial impact on the pathophysiology of GERD, PUD, and gastritis. In the older age the defence mechanisms deteriorate due to refluxates comprising higher level of luminal acidity or due to ingestion of substances containing alcohol, osmolality, heat, or smoke-derived chemicals (De Giorgi, Palmiero, Esposito, Mosca, & Cuomo, 2006). For example, peptic ulcer predominantly affects the older population aged between 55 and 65 years. There are various methods of diagnosing GERD, PUD, and gastritis, such as Radiological Diagnosis, Laboratory Testing, Endoscopic Diagnosis. Similarly, there are various methods of treating GERD, PUD, and gastritis, but the most common among them are Medical Therapy, Surgical Therapy and Endoscopic Therapy. However, besides these therapies there are several other therapies which are used to treat patients suffering from GERD, PUD, and gastritis, such as Injection Therapy, Mechanical Therapy, Radiological Therapy, and so on. The following mind map is prepared for treating gastritis.

### **A mind map for gastritis**



## References

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