

Problems of Digestion 2022

- Nausea—feeling of discomfort in epigastric area; need to vomit
- Vomiting (emesis)—forceful ejection of partially digested food and secretions
 - Many causes: for example, GI disorders or infections; CNS disorders; CV problems; pregnancy; endocrine/metabolic disorders; side effects of medications, anesthesia, or chemotherapy; psychologic factors; or motion
 - Pathophysiology
 - Stimuli from GI tract, kidneys, heart, or brain send impulses via afferent pathways to receptors in medulla (vomiting center) to initiate vomiting
 - Chemoreceptor trigger zone (CTZ) in brainstem responds to stimuli from drugs, toxins, and motion; activates ANS:
 - SNS—tachycardia, tachypnea, diaphoresis
 - PNS—Relaxes LES, increases gastric motility, increases saliva

Interprofessional Management:

- Goals: Identify and treat cause and any complications; symptom relief
- Drugs:
 - Anticholinergic
 - Scopolamine Transdermal Patch
 - Blocks cholinergic pathways to vomiting center
 - Antihistamines
 - Dimenhydrinate (Dramamine), Diphenhydramine (Benadryl), Hydroxyzine, Meclizine (Antivert)
 - Block histamine receptors that trigger nausea and vomiting
 - Cannabinoids
 - Dronabinol (Marinol), Nabilone (Cesamet)
 - Inhibit vomiting control mechanism in the medulla oblongata
 - Corticosteroids
 - Dexamethasone
 - Not well understood how it prevents N/V
 - 5-HT₃ (Serotonin) Antagonists
 - Granisetron, Ondansetron (Zofran), Palonosetron (Aloxi)
 - Blocks action of serotonin
 - Phenothiazines
 - Chlorpromazine, Prochlorperazine, Promethazine (Phenergan), Prokinetic, Metoclopramide (Reglan)
 - Acts in the CNS level of the CTZ
 - Blocks dopamine receptors that trigger N/V
 - Metoclopramide inhibits action of dopamine, increases gastric motility and emptying
 - Substance P/ neurokinin-1 receptor antagonists

- Aprepitant (Emend), Netupitant and Palonosetron (Akynzeo), Rolapitant (Varubi)
 - Blocks interaction of substance P at NK-1 receptor
- Anorexia usually accompanies nausea
- Prolonged N/V quickly leads to dehydration, electrolyte loss
- Severe electrolyte imbalances, decreased circulating plasma, and eventually circulatory failure if not treated
- Metabolic alkalosis results from loss of gastric acid
 - Much less frequently, metabolic acidosis can occur with vomiting small intestine contents
- Severe vomiting leads to rapid weight loss

Nursing Assessment

- Subjective data
 - Important Health Information: past health history, medications, surgery or other treatments
- Functional health patterns
 - Nutritional–metabolic, activity–exercise, cognitive–perceptual, coping–stress tolerance
- Objective
 - General, integumentary, gastrointestinal, urinary, diagnostic findings
 - Identify source, timing, and characteristics of emesis
 - Partially digested food: gastric outlet obstruction or delayed gastric emptying
 - Fecal odor and bile—obstruction below pylorus
 - Bile—obstruction below ampulla of Vater
 - Bright red blood—active bleeding
 - Mallory-Weiss, varices, ulcer, cancer
 - Coffee-ground—gastric bleeding
 - Determine if vomiting, regurgitation, or projectile
- Nursing Diagnoses
- Planning
 - Goals:
 - Minimal or no nausea and vomiting
 - Normal electrolytes and hydration status
 - Return to normal pattern of fluid balance and nutrient intake
- Nursing Care: Acute Care

- o NPO
- o IV Fluids
- o NGT
- o Monitor I & O, VS, assess for dehydration
- o Psychosocial and environmental comfort
- o Aspiration precautions
- Nursing Care: Nutritional therapy
 - o IV fluids until tolerate oral intake
 - o Clear liquids; sips of *water every 15 to 20 minutes
 - Carbonated, room temp beverage; warm tea
 - Dry toast, crackers, gelatin
 - o Progress to high carb, low fat; bland
 - o Avoid over distention
 - o Dietary consult as needed
- Outpatient Care
 - o Patient and caregiver education
 - Manage/prevent nausea and vomiting
 - Maintain fluid and nutritional intake
 - Other: Environmental comfort, avoid sudden position changes, hygiene between episodes
 - Notify HCP if suspect medication is cause
 - Acupressure, Acupuncture
 - Ginger, peppermint
- Nursing Evaluation and Gerontologic Considerations
- Outcomes:
 - o Minimal or no nausea and vomiting
 - o Electrolytes WNL
 - o Maintain adequate fluid and nutrient intake
- Gerontologic considerations
 - o Careful monitoring with fluid loss and rehydration
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 - o Aspiration precaution
 - o Antiemetic drugs
 - CNS effects:

Disorders of the Stomach and Upper Small Intestine

Peptic Ulcer Disease (PUD)

- Erosion of GI mucosa from HCl acid and pepsin
- Susceptible areas of GI tract: lower esophagus, stomach, duodenum, post-op gastrojejunal anastomosis
- Types:

- Acute—superficial erosion and minimal inflammation
- Chronic—Erosion of muscular wall with formation of fibrous tissue; present continuously for long duration
- Classified by locations, e.g. gastric or duodenal

Gastric Ulcers

- More prevalent in females older than 50 years
- Increased obstruction
- Risk factors: *Helicobacter pylori*, NSAIDs, bile reflux
- Increased mortality
- High recurrence

Duodenal Ulcers

- Usually first 1-2cm
- Prevalent age 35 to 45
- Etiology: *H. pylori*
- High HCL secretion
- High risk: COPD, cirrhosis, pancreatitis, hyperparathyroidism, Zollinger-Ellison syndrome, CRF
- Occur, disappear, recur

Peptic Ulcers

- Risk Factors
- *H. pylori*
 - CagA positive strain
 - Major risk factor
 - 80% gastric
 - 90% duodenal
 - Transmission
 - Oral-oral or fecal-oral
 - Black and Hispanic higher risk
 - Long survival
 - Produce urease
- Medication-Induced Injury
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- Lifestyle factors
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Clinical Manifestations

- Gastric

- Epigastric discomfort 1 to 2 hours after meal; burning or gaseous pain; food may worsen
- Duodenal
 - Burning or cramplike pain in midepigastric or back; 2 to 5 hours after meal
 - Pain relief with food and antacids

Diagnostic Studies

- Endoscopy—direct visualization
 - Obtain specimens for *H. pylori* (urease)
 - Monitor progress toward healing
- Noninvasive *H. pylori*: serology, stool, breath test
- Other tests: barium contrast, high fasting serum gastrin levels, secretin stimulation
- Labs: CBC, liver enzymes, serum amylase
- Stool—blood

Interprofessional Management

- Treatment goals: decreased gastric acidity and enhance mucosal defense mechanisms
- Conservative care
 - Adequate rest, no smoking or alcohol, stress management, dietary modifications
 - Pain management. No NSAIDs or aspirin 4 to 6 weeks unless administered with PPI, H₂ receptor blocker, or misoprostol
 - Endoscopic evaluation and follow-up; 3 to 6 months for healing
- Drug therapy
 - Reduce gastric acid secretion (PPI)
 - Eliminate *H. pylori* (antibiotics and PPI)
 - Patient education: adherence important; teach about drugs; report recurrence of pain or blood in vomitus or stool
- Antibiotic therapy—*H. pylori* 14 days of PCN; if allergic, metronidazole
 - Bismuth alone or combined with tetracycline and metronidazole
- Proton pump inhibitors
 - Reduce gastric acid secretion
 - Promote ulcer healing
 - Used in combination with antibiotics for *H. pylori*
 - Examples:
 - Pantoprazole (Protonix)
 - Omeprazole (Prilosec)
 - Lansoprazole (Prevacid)
 - Esomeprazole (Nexium)
- Cytoprotective drug therapy
 - Short term treatment
 - Used to provide mucosal protection for the esophagus, stomach, and duodenum
 - Sucralfate (Carafate)
 - Does not have acid-neutralizing therapies

- Most effective given at a low pH, so at least 60 minutes before or after antacids
 - Minimal adverse effects
 - Binds with cimetidine, digoxin, warfarin, phenytoin, and tetracycline... reducing bioavailability
- Adjunct drugs
 - o H2 Receptor Blockers and Antacids
 - Used as adjunct to promote ulcer healing
 - Antacids increase gastric pH and neutralize HCl acid
 - Reduces the acid content of chyme reaching the duodenum
 - Famotidine, Cimetidine, Nizatidine
 - o Misoprostol
 - Synthetic prostaglandin analog
 - Helps prevent ulcers caused by NSAIDs and ASA
 - Protective and some antisecretory effects on gastric mucosa
 - Teratogenic- used with caution in women of childbearing potential
 - o Tricyclic Antidepressants
 - May be prescribed for some patients
 - Contribute to overall pain relief through effects on afferent pain fiber transmission
 - Have varying degrees of anticholinergic properties, which results in reduced acid secretion
 - o Anticholinergics
 - Can be used to treat PUD
 - Associated with several side effects: dry mouth, warm skin, flushing, thirst, tachycardia, dilated pupils, blurred vision, and urine retention
- Nutritional therapy
 - o No specific diet
 - o Should eat and drink foods and fluids that do not cause distressing symptoms
 - o Foods that may cause gastric irritation include:
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 - o Avoid alcohol as it delays healing
- Surgical therapies
 - o Uncommon unless complications or cancer

Complications

- Three major: hemorrhage, perforation, gastric outlet obstruction; emergent
- Hemorrhage—most common; duodenal
- Perforation—most lethal

- GI contents spill into peritoneal cavity
- Sudden, severe abdominal pain; radiates to back and shoulders; no relief with food or antacids; abdomen rigid/boardlike; bowel sounds absent; nausea and vomiting; respirations shallow, pulse increased and weak
- Intensity proportional to amount and duration of spillage
- If untreated, bacterial peritonitis occurs in 6-12 hours
- Immediate focus—stop spillage and restore blood volume
 - NGT for aspiration and gastric decompression
 - IV fluids and blood; broad spectrum antibiotics
 - Other: Central line, PA catheter, ECG, urinary catheter
 - Small perforations—self-sealing; monitor for obstruction
 - Large perforations—surgery for closure and suctioning of peritoneal cavity
- Gastric outlet obstruction
 - Edema, inflammation, pylorospasm, or scar tissue cause obstruction in distal stomach and duodenum
 - Stomach fills and dilates causing discomfort and pain; worse at end of day; may be visibly dilated
 - Belching and vomiting (projectile) may provide some relief; constipation and anorexia
 - Treatment: decompress with NGT; PPI or H₂ receptor blocker; pain management; fluid and electrolyte replacement; surgery or balloon dilation

Nursing Management: Nursing Assessment

- Subjective data
 - Important health information:
 - CKD, Pancreatic disease, COPD, serious illness or trauma, hyperparathyroidism, cirrhosis, ZES
 - Medications
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 - Complicated or prolonged surgeries
 - Functional health patterns:
 - Chronic ETOH, smoking, caffeine use
 - Weight loss, anorexia, N/V, hematemesis, dyspepsia, heartburn, belching
 - Black tarry stools
 - Cognitive-perceptual
 - Duodenal – Burning mid-epigastric or back pain 2-5 hrs after eating – relieved by food; night pain is common
 - Gastric – High epigastric pain 1-2 hrs after eating. Food may worsen pain
 - Acute or chronic stress
- Objective data
 - Anxiety / irritability

- Epigastric tenderness
- Anemia, Guaiac-positive stools. Positive blood, urine, breath, or stool tests for H-pylori. Abnormal UGI endoscopic or barium studies

Nursing Management

- Nursing diagnoses
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- Planning: Goals
 - Adhere to prescribed regimen
 - Reduced or absent discomfort
 - No signs of GI complications
 - Complete healing
 - Lifestyle modifications to prevent recurrence
- Nursing implementation
 - Health promotion:
 - Ulcerogenic drugs
 - Teach to report gastric distress symptoms to HCP
 - Acute care
 - NPO, NGT, IV fluids, VS, monitor for shock
 - Gastric content analysis; check pH, blood, or bile
 - Monitor labs
 - Manage pain and anxiety; restful environment

Nursing Management

- Acute care: Monitor for complications
- Hemorrhage
 - Monitor VS
 - NGT Suction, maintain patency especially with blood clots
 - Pain decreases because the blood helps neutralize the acidic gastric contents
 - See interventions for upper GI bleeding
- Perforation
 - Notify HCP immediately
 - Frequent VS
 - Stop all oral or NG intake
 - IV fluids
 - Pain management
 - Antibiotics
 - Prepare for surgery if needed
- Gastric outlet obstruction

- NGT to suction, irrigate per policy; rotate patient side to side to move tip of NGT off mucosa in stomach
- Monitor ACCURATE I & O, reposition patient; IV fluids and replace electrolytes
- Gastric residual; if less than 200 mL after clamped for 8 to 12 hours, begin oral intake; progress to solids
- No relief or recurrence—surgical intervention
- Ambulatory care
 - Patient and Caregiver Education (Table 41-16 in the textbook)
 - Prevent recurrence and complications:
 - Dietary modifications
 - Lifestyle modifications
 - Medication adherence
 - Stress management
 - Disease management/follow-up care; symptoms to report to HCP
- Evaluation: Outcomes
 - Pain controlled without analgesia
 - Verbalizes understanding of treatment plan
 - Committed to self-care and disease management
 - No complications
- Gerontologic Considerations: PUD
 - Increased morbidity and mortality
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 - First symptom may be GI bleed or decreased Hct
 - Treatment plan is similar with emphasis on teaching and prevention

Stomach (Gastric) Cancer

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- Increased incidence in United States:
 - Proximal gastric and gastroesophageal junction
 - Asian Americans, Pacific Islanders, Hispanics, blacks
 - Men more than women = 2:1
- Average age 68
- Often metastasized when diagnosed
- 5-year survival if confined to stomach = 71%
- 5-year survival with metastasis = 31%

Etiology and Pathophysiology

- Etiology—no known specific cause
- Nonspecific factors: H. pylori, autoimmune-related inflammation, repeated exposure to irritants
- Other associated or predisposing factors:
 - Dietary: smoked foods, salted fish and meat, pickled vegetables
 - H. pylori infection at early age; Lymphoma of stomach; atrophic gastritis, pernicious anemia, polyps, achlorhydria; smoking, obesity

- Spreads by direct extension—liver and adjacent tissue

Clinical Manifestations

- GI: unexplained weight loss, indigestion, abdominal discomfort/pain, early satiety
- Anemia: pale, weak, fatigue, dizzy, short of breath, heme + stool
- Metastasis/late signs:
 - Supraclavicular lymph node enlargement
 - Ascites

Diagnostic Studies

- H & P
- Upper GI Endoscopy with biopsy
- EUS, CT, MRI, PET—staging
- Laparoscopy—peritoneal spread
- Labs: CBC, liver enzymes, amylase, tumor markers
- Stool—occult blood

Interprofessional Management

- Surgical therapy—
 - Remove as much of the stomach as required to remove the tumor and normal margins
 - Lesions in antrum or pylorus—Billroth I or II
 - Lesions in fundus—total gastrectomy with esophagojejunostomy
 - Other: depends on areas of metastasis
- Chemotherapy and radiation therapy
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 - May be given intraperitoneal for metastasis
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 - Radiation may be done with chemotherapy or as palliative treatment for obstruction or to reduce tumor mass
- Targeted therapy
 - Trastuzumab—kills stomach cancer cells
 - Ramucirumab—prevents growth and spread

Nursing Management: Nursing Assessment

- Similar to that of PUD
- Nutritional assessment
- Psychosocial history
- Patient's perceptions of health problems
- Physical exam

Nursing Diagnoses

Planning: Goals

- Minimize discomfort
- Optimize nutritional status
- Maintain a degree of spiritual and psychologic well-being appropriate to the disease state

Nursing implementation

- Health promotion:
 - Identify patients at risk
 - Recognize symptoms and unrelieved PUD
- Acute care
 - Emotional support
 - Nutritional support
 - Fluid volume restoration/PRBCs
 - Preoperative and postoperative teaching
 - Chemotherapy and/or radiation therapy
- Ambulatory care
 - Home health care
 - Resources: community agencies (eg. American Cancer Society)
- Evaluation
 - Minimal to no discomfort, pain or nausea
 - Optimal nutritional status
 - Maintain degree of psychologic well-being appropriate to disease state

Gastric Surgery

- Partial gastrectomy
 - Gastroduodenostomy—Billroth I
 - Gastrojejunostomy—Billroth II
- Gastrectomy—remove stomach
 - Anastomosis of esophagus to jejunum
- Vagotomy—total or selective
 - Sever vagus nerve; decreased gastric acid secretion
- Pyloroplasty
 - Enlargement of pyloric sphincter

Gastric Surgery: Postoperative Complications

- Dumping syndrome
 - Gastric chyme enters small intestine as large hypertonic bolus; pulls fluid into bowel lumen causing decreased plasma volume, distention of bowel lumen, and rapid transit within 15 to 30 minutes of eating
 - See weakness, sweating, palpitations, dizziness, cramping, borborygmi, and defecation urge
 - Lasts about 1 hour
 - Reduced with rest after eating

- Postprandial hypoglycemia—variant of dumping syndrome
 - Uncontrolled gastric emptying of a bolus of fluid high in carbohydrates into the small intestines.
 - Causes excess insulin excretion into circulation resulting in hypoglycemia ~ 2 hours after eating
 - S/Sx of hypoglycemia: sweating, weakness, confusion, palpitations, tachycardia, anxiety (hypoglycemia reaction)

- Bile reflux gastritis—after reconstruction or removal of pylorus
 - Bile reflux causes damage to gastric mucosa, chronic gastritis, and PUD
 - Epigastric distress worse after meals and temporarily relieved with vomiting
 - Administer cholestyramine—binds bile salts that are the source of the gastric irritation

- Pernicious Anemia
 - Seen with complete gastrectomy
 - Loss of intrinsic factor
 - Treatment: Vitamin B12 injections once a month for life

Nursing Management: Gastric Surgery

- Preoperative care
 - Laparoscopic or open techniques
 - Teach patient about procedure and postoperative expectations
 - Comfort measures/pain management
 - Cough and deep breathe
 - NGT
 - IV fluids

- Postoperative care
 - Fluid and electrolyte balance
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 - Prevent respiratory complications
 - Respiratory assessment; VS, dyspnea, chest pain, cyanosis
 - Splint incision with cough and deep breathing
 - Analgesia, early ambulation, reposition frequently
 - Maintain comfort: pain, nausea/vomiting
 - Prevent infection
 - Monitor VS
 - Assess wound
 - Monitor for complications (especially if obese):
 - Atelectasis, pneumonia, DVT, PE, pneumothorax
 - Anastomosis leak—tachycardia, dyspnea, fever, abdominal pain, anxiety, restlessness

- Requires immediate treatment to prevent sepsis and death
 - Hemorrhage—VS, NG aspirate
 - NGT for decompression; reduces pressure to suture line; decreases edema and inflammation
 - Observe gastric aspirate: color, amount, odor
 - Bloody drainage expected for 2 to 3 hours
 - Report excess (greater than 75mL/hr)
 - Monitor for clots/obstruction
 - Irrigate with NSS to avoid rupture of sutures, leakage into peritoneal cavity, hemorrhage, and abscess formation
 - Should darken and change to yellow green in 36 to 48 hours

Nursing Management: Nutritional Therapy

- Understand surgical procedure and anatomical changes
- Dietician consult; reinforce instructions
- Enteral feedings or parenteral nutrition
- Wound healing: potassium, vitamins C, D, K, and B-complex
- Pernicious anemia—loss of intrinsic factor; needed for absorption of cobalamin in terminal ileum; essential for RBCs
 - Administer vitamin B12
- Reduced stomach size means reduced meal size
 - First few weeks: soft, bland, low fiber, high complex carbohydrates, and high protein
 - Small, frequent meals
 - No fluids with meals, chew thoroughly
 - Avoid simple sugars, lactose, and fried foods
 - Avoid extreme food temperatures
 - Avoid hypoglycemia—limit sugar with meals; moderate protein and fat
- Nursing Management: Ambulatory Care
- Patient/caregiver education
 - Pain management
 - Wound care
 - Nutrition
 - May need skilled care or home care services

Gastritis

- Inflammation of gastric mucosa
 - Acute or chronic; diffuse or localized
- Etiology and pathophysiology
 - Breakdown in gastric mucosal barrier allowing HCl acid and pepsin to diffuse back into mucosa results in tissue edema, disruption of capillary walls with loss of plasma into gastric lumen and possible hemorrhage

Causes

- Drug-related:

- Aspirin, NSAIDs, Corticosteroids, digitalis, iron supplements
- Diet:
 - Alcohol use
 - Spicy, irritating foods
- Female, age over 60, history of PUD
- Helicobacter pylori and other bacterial, viral or fungal infections
- Environmental: radiation, smoking
- Diseases/Disorders: autoimmune gastritis, burns, Crohn's, hiatal hernia, physiologic stress, bile reflux, renal failure, sepsis, shock
- Other: Endoscopy, NGT, psychologic stress

Clinical Manifestations

- Acute
 - Anorexia
 - Nausea and vomiting
 - Epigastric tenderness
 - Hemorrhage
 - Self-limiting
- Chronic
 - Similar to acute
 - Asymptomatic
 - Pernicious anemia

Gastritis: Diagnostic Studies

- Based on symptoms
- History of drug or alcohol use
- Endoscopy with biopsy
- *H. pylori* testing
- CBC
- Stool for occult blood
- Antibodies to parietal cells and intrinsic factor

Nursing and Interprofessional Management: Gastritis

- Acute gastritis
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 - Severe: NGT to monitor for bleeding; lavage, empty stomach
 - Risk for hemorrhage: monitor VS, heme test vomitus; upper GI bleed strategies
 - Drugs: PPIs or H₂ receptor blockers
- Chronic gastritis
 - Evaluate and eliminate cause
 - Antibiotics for *H. pylori*
 - Cobalamin for pernicious anemia

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- Test for occult blood; report positive to HCP
- Varices: avoid pressure (severe coughing or sneezing)
- Blood dyscrasias—teach about disease, drugs, and risk of GI bleeding

Acute care:

- Emergency management
 - Assess/monitor circulation, airway, breathing
 - IV access—Two large bore
 - IV fluids, PPIs, and blood
 - Oxygen, ECG monitoring, VS, LOC
 - Labs: CBC, clotting studies, type and crossmatch
 - NGT, urinary catheter; I & O
 - Abdomen, bowel sounds, NPO
 - Older adult: watch fluid overload
- NGT management: proper position, assess aspirate for blood
 - Lavage: 50 to 100 mL instilled and drained
- Assess stool and vomitus for blood
- Oral intake: monitor nausea and vomiting
 - Clear liquids—advance as tolerated
- Alcohol use disorder—monitor for withdrawal; delirium tremens

Ambulatory Care

- Patient and caregiver education
 - Avoid future bleeding; what to do if occurs
 - Only take prescribed drugs
 - Smoking or alcohol cessation resources
 - Long-term care and follow up

Evaluation

- Outcomes
 - No upper GI bleeding
 - Normal fluid volume
 - Normal hemodynamic state
 - Understand potential etiologic factors and make appropriate lifestyle modifications