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Medical Diagnosis/Disease: Crohn's Disease

NCLEX IV (8): Physiological Integrity/Physiological Adaptation

Anatomy and Physiology

Normal Structures

4 layers inside to outside of GI tube: mucosa lining, submucosa connective tissue: glands, blood vessels, and lymph nodes, muscles, and serosa. 3 smooth muscle layers from inside to outside: oblique, circular, and longitudinal that supply nutrients to body cells through 1) ingestion, 2) digestion and absorption, then followed by 3) elimination.

1) ingestion: controlled by the hypothalamus. Swallowing is mechanical ingestion. Mouth: teeth for chewing, tongue: a muscle aiding in chewing and moving food for swallowing. Taste receptors on tongue and 3 salivary glands: parotid, submaxillary, sublingual producing saliva (water, protein, mucin, inorganic salts, salivary amylase.) Pharynx: (nasal, oral, and laryngeal-) lined with a mucous membrane. Oropharynx is passageway to esophagus, stimulated by food and water to initiate swallowing. The epiglottis closes over larynx opening to prevent food into lungs. Tonsils and adenoids (lymphoid tissue) prevent infection. Esophagus: In thoracic cavity as hollow, muscular tube of 4 layers inside to outside: inner mucosa, submucosa, muscularis propria, and adventitia. Upper 1/3 striated skeletal muscle and bottom 2/3s smooth muscle. During swallowing, the upper esophageal sphincter (UES)relaxes with peristaltic waves moving bolus into esophagus. Between swallows UES closes. Food moves into stomach by peristalsis and opening of lower esophageal sphincter (LES) control. LES stays contracted except during swallowing, belching, or vomiting to prevent acid reflux into esophagus.

2) Digestion and absorption: physical and chemical breakdown of food into absorbable substances. Begins in mouth by chewing and salivary amylase, breaking down starch into maltose. Stomach muscles mix food with gastric secretions to form chyme. In the small intestine, chyme stimulates motility and secretion from enzymes in pancreas, bile from liver, and enzymes from small intestines. Monosaccharides, fatty acids, amino acids, water, electrolytes, vitamins, and minerals are absorbed in small intestine. Stomach: store and mix food with gastric contents and empty them in small boluses into small intestine. It only absorbs small amounts of water, alcohol, electrolytes, and certain drugs. J-shaped with 3 parts: fundus (cardia), body, and antrum. Pylorus is proximal to pyloric sphincter on antrum, which that and the LES guard contents to/from stomach. Wall has 4 layers from outside to inside: serous, continuous with peritoneum, and muscular layer of longitudinal, circular, and oblique all forming folds called rugae with small glands. In the fundus, the glands contain chief cells that produce pepsinogen and parietal cells that produce HCl acid, water, and intrinsic factor. The HCL acid helps protect against ingested organisms and intrinsic factor helps B12 absorption in small intestine. Small intestine: digestion and absorption. About 23 ft long and 1 inch in diameter from pylorus to ileocecal valve, which prevents reflux of large intestine into small. Composed of duodenum, jejunum, and ileum. Thick, vascular, and glandular mucosa with villi. They

Pathophysiology of Disease

-Irritable Bowel Disease (IBD) is classified as either ulcerative colitis (limited to colon) or Crohn's Disease (any segment of GI tract from mouth to anus). Occurs typically in distal ileum & proximal colon. Typical ulcerations are deep, longitudinal, & penetrate mucosa (cobblestone appearance).
-peaks in teenagers / early adulthood
-autoimmune disease involving an immune reaction to a person's own intestinal tract: resulting from a possible: overactive, inappropriate, or sustained immune response to environmental / bacterial triggers in genetically susceptible person
-widespread tissue destruction
-highest rate in northern hemisphere / industrialized nations
-**genetics:** esp. in monozygotic twins. 200 genes associated, one such as mucosal destruction, protective functions, maturation/function of T cells,
-**NOD2, ATG16L1, IL23R, IRGM:** immune system function: help sense and respond appropriately to bacteria, can affect ileum, also potentially allowing bacteria to grow unchecked and invade intestinal cells (chronic inflammation and digestive problems)

NCLEX IV (7): Reduction of Risk

Anticipated Diagnostics

Labs

-**CBC** (iron deficiency anemia from blood loss, high WBC from toxic megacolon or perforation)
-low K, Na, Cl, bicarb, & Mg: fluid/electrolyte losses from diarrhea & vomiting
-hypoalbuminemia (severe from poor nutrition or protein loss)
- ↑ erythrocyte sedimentation rate, CRP, & WBC reflect inflammation
-vitamin levels

Additional Diagnostics

-bone density scan (at r/f OA)
-**stool sample:** for blood, pus, mucus (can also determine infection)
-small bowel series
-Transabdominal UA
-CT / MRI
-double-contrast barium enema (XR)

contain epithelial cells that produce enzymes and have microvilli to increase the surface area for digestion and absorption.

3) Elimination: Large intestine: 5-6ft long and 2 in I diameter. Most important function is water and electrolyte absorption. Forms feces and holds until defecation. Creates mucous to lubricate and protect mucosa. Microorganisms in colon 1) produce vit. K and D and 2) breaks down undigested or unabsorbed proteins from small intestine. Bacteria produce gas that escapes from the colon as flatulence or flatus. Slow, propulsive peristalsis occurs from reflexes. Defecation is voluntary and involuntary from parasympathetic nerve fiber endings, producing contraction of rectum and relaxation of anal sphincter. Associated organs: Liver: largest internal organ and rich blood supply from portal circulatory system. The hepatic cells make bile that is needed for fat emulsification and digestion. Pancreas: gland behind stomach with exocrine and endocrine functions. Exocrine contributes to digestion through production and release of enzymes, while the endocrine cells secrete insulin, amylin, glucagon, somatostatin, and pancreatic polypeptide. Gallbladder: concentrates and stores bile. Presence of fat in in upper duodenum triggers release of cholecystokinin, causing gallbladder to contract and release bile. It travels along the common bile duct to the duodenum where the pancreatic duct also enters.

Nervous system: parasympathetic of ANS (cholinergic and is mainly excitatory) and sympathetic of ANS (adrenergic and is mainly inhibitory). GI has it's own NS: enteric or intrinsic. Regulates motility and secretion along tract of 2 networks: 1) Meissner plexus in submucosa. Controls secretion and involved in sensory functions and 2) Auerbach (myenteric) plexus between the muscle layers. Major nerve supply and controls GI movements. ENS receives innervation from ANS but mainly functions independently of brain and spinal cord.

Circulation: venous blood draining GI tract organs empty into the portal vein, which perfuses into liver, allowing it to clean blood of bacteria and toxins of GI tract. The celiac artery, superior mesenteric artery (SMA), and the inferior mesenteric artery (IMA) supply arterial blood to the GI tract. Stomach and duodenum from celiac axis. Distal small intestine →mid large intestine from branches of hepatic and SMA. Distal large intestine through anus receives from IMA. GI tract & accessory organs receives 25-30% of CO at rest and 35%+ after eating.

-Peritoneum: covers abd. 2 layers: 1) parietal (lines cavity wall) and 2) visceral (covers abd. Organs). Peritoneal cavity space between parietal / visceral layers. 2 folds of peritoneum: 1) mesentery. Attaches small intestine and part of large to post. Abd. Wall. Contains blood and lymph vessels and 2) omentum: hangs form stomach to intestines containing fat and lymph nodes.

-Small intestine: secretes 3000mL/day.

Aminopeptidase: protein digestion; amylase: carb digestion; enterokinase: activation of trypsinogen to trypsin; lactase: lactase to glucose & galactose; lipase: fat digestion; maltase: maltose to 2 glucose molecules; peptidase: protein digestion; and sucrase: sucrose to glucose & fructose

NCLEX II (3): Health Promotion and Maintenance

Contributing Risk Factors
 -urban area
 - white or Ashkenazi Jewish origin
 -strongest: family Hx
 -poor diet
 -smoking, stress
 -high intake of refined sugar, total fats, polyunsaturated fatty acid, & omega-6 fatty acids
 -NSAIDs
 -Abx
 -oral contraceptives
 -more likely w/ cystic fibrosis, psoriasis, multiple sclerosis

Signs and Symptoms
 -diarrhea
 -cramping
 -abd. pain
 -weight loss from small intestinal involvement (leads to malabsorption)
 -rectal bleeding
 -fatigue
 -fever / chills
 -abd. tenderness, rebound, guarding, mass may be palpable
 -fistulas, fissures, perianal lesions

Possible Therapeutic Procedures
Non-surgical
 -pap smears if immunocompromised
 -annual skin exam

Surgical
 -colonoscopy / sigmoidoscopy (inflammation, pseudopolyps, ulcerations, strictures) - can get Bx
 -capsule **endoscopy** to Dx Crohn's in small intestine
 -resection w/ reanastomosis of remaining intestine
 -strictureplasty: opens narrowed areas obstructing bowel

Prevention of Complications
 (What are some potential complications associated with this disease process)
 - ↑ incidence of small intestinal cancer
 - ↑ incidence of CRC (colorectal cancer), but less than ulcerative colitis
 - ↑ incidence & severity of *C. diff* infection
 -perforation common (due to inflammation of entire bowel wall)
 -perianal abscess / fistula: from microscopic leaks allowing blood to enter peritoneal cavity (can also cause peritonitis)
 -strictures r/t inflammation that can cause bowel obstructions
 -rare: toxic megacolon
 -hemorrhage
 -malabsorption
 -liver disease
 -OA
 -systemic: multiple sclerosis & ankylosing spondylitis

NCLEX IV (6): Pharmacological and Psychosocial/Holistic

Parenteral Therapies
Anticipated Medication Management
 -aminosalicylate (suppress production of proinflammatory cytokines)
 -antimicrobials (prevent or Tx secondary infections)
 -corticosteroids (prevent or decrease inflammation of intestinal mucosa, shortest possible time)
 -immunomodulators (maintain remission after corticosteroids)
 -biologic therapies (reduced inflammation by blocking proteins: 4 types: **anti-TNF agents** (inhibit cytokine tumor necrosis [TNF] factor), alpha 4-integrin inhibitors

NCLEX IV (5): Basic Care and Comfort

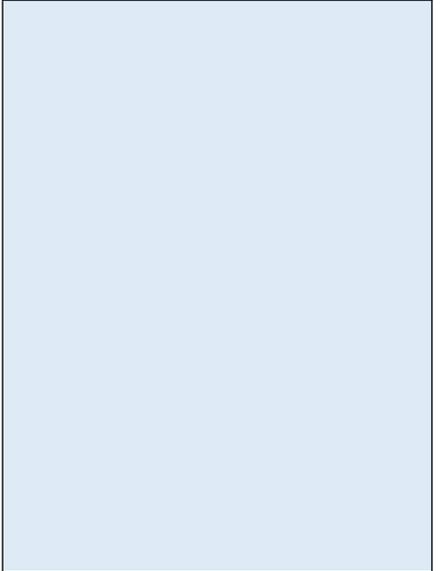
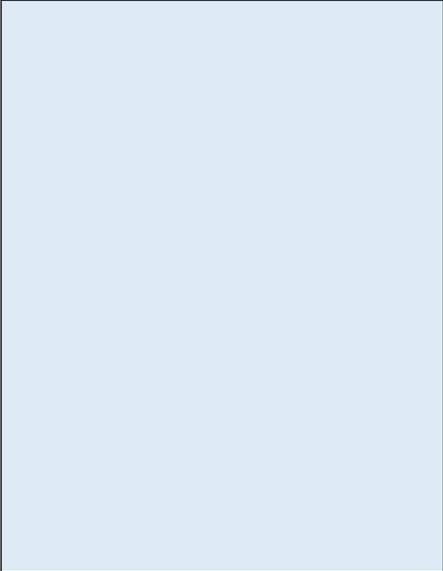
Non-Pharmacologic Care Measures
 -**hemodynamic stability**
 -fluid/electrolyte balances
 -**nutritional support** (med. Diet long-term)- liquid enteral feedings
 -**#/appearance of stool**
 -meticulous skin care & possible sitz bath/ soothing compress / barrier ceram
 -**assess abd. & bowel sounds**

NCLEX III (4):

Care Needs

What stressors might a patient with this diagnosis be experiencing?
 -depression / anxiety r/t intermittent exacerbations
 -financial stress
 -life-long medication regimen
 -potential smoking cessation
 -life-long dietary changes

(prevent migration of leukocytes from bloodstream to inflamed tissue), interleukin (IL)-12/23 antagonists (bind IL-12 & IL-23 to prevent activation of T-helper & NK cells), & Janus kinase (JAK) inhibitors (block JAK enzyme to prevent it from activating immune cells that cause inflammation)
 -Zinc/iron supplements
 -pain medications



Client/Family Education

NCLEX I (1): Safe and Effective Care Environment

List 3 potential teaching topics/areas
 • Importance of diet/medication adherence while maintain proper rest
 • Ways to manage stress to reduce flare-ups
 • When to seek medical care for specific S/Sx

Multidisciplinary Team Involvement
 (Which other disciplines do you expect to share in the care of this patient)
 -Gastroenterologist
 -dietician
 -pharmacist
 -PT
 -radiologist
 -psychotherapist
 -support groups

Potential Patient Problems (Nursing Diagnoses)

To Be Completed Before the Simulation

Anticipated Patient Problem: Deficient fluid volume

Clinical Reasoning: r/t GI bleed

Goal 1: By the end of my time of care, pt will have a urinary output of at least 30mL/hr

Goal 2: By the end of my time of care, pt will have elastic skin turgor w/ immediate recoil.

Relevant Assessments	Multidisciplinary Team Intervention
(Pework) What assessments pertain to your patient's problem? Include timeframes. Assess urine, stool, or emesis for blood (red, tarry, black, or coffee-ground in nature) q4hrs & prn	(Pework) What will you do if your assessment is abnormal? Provide lab w/ stool sample and check for occult blood

Assess skin turgor and mucous membranes q4hrs & prn	Encourage PO fluids
Assess VS q4hr & prn q4hr & prn	Administer blood transfusion if hypovolemic and administer supplemental O2 prn
Assess for abd. distention/ridigity/tenderness q4hr & prn	Administer Infliximab IV per order
Listen to bowel sounds q4hr & prn	If absent for at least 5 minutes in each quadrant, notify HCP.
Assess urine output q4hr & prn	Increase rate of continuous IVF per order

To Be Completed Before the Simulation

Anticipated Patient Problem: Acute pain in abdomen

Clinical Reasoning: r/t inflammation of intestine

Goal 1: By the end of my time of care, pt will be in 0/10 pain on a 0-10 scale.

Relevant Assessments	Multidisciplinary Team Intervention
(Prewrite) What assessments pertain to your patient's problem? Include timeframes.	(Prewrite) What will you do if your assessment is abnormal?
Assess pain levels & characteristics q4hrs & prn	Administer morphine IV per order
Assess VS q4hr	Use nonpharmacologic care measures such as breathing exercises and distraction techniques (visiting w/ family and watching the CARE channel)
Assess pt ability to sleep at the beginning of my time of care & before lunch arrives	Cluster care & provide frequent rest periods
Assess comfort measures, such as lighting in room, quietness, & clean sheets/gown	Perform linen change w/ bath and reposition pt to comfortable position
Assess if certain foods cause intestinal pain q4hrs around mealtimes	Call dietician to talk to pt about meal changes
Assess pain near perianal area after potential diarrhea	Provide sitz bath and/or pericare w/ barrier cream

Goal 2: By the end of my time of care, pt's HR will be between 60-100bpm.

To Be Completed During the Simulation:

Actual Patient Problem: Deficient Fluid Volume

Clinical Reasoning: r/t occult blood in stool, active bleeding during endoscopy, & low H&H.

Goal: By the end of my time of care, pt will have no S/Sx of active bleeding.

Met: Unmet:

Goal: By the end of my time of care, pt will have a SBP between 100-120 and a DBP of at least over 60mmHg.

Met: Unmet:

Actual Patient Problem: Acute abdominal pain

Clinical Reasoning: r/t GI bleed, and post-op from endoscopy

Goal: By the end of my time of care, pt will be in 3/10 pain or lower on a 0-10 scale.

Met: Unmet:

Goal: By the end of my time of care, pt's HR will be between 60-100bpm.

Met: Unmet:

Additional Patient Problems: Maladaptive coping

Below will be your notes, add more lines as needed. **Relevant Assessments:** Indicate pertinent assessment findings.
Multidisciplinary Team Intervention: What interventions were done in response to your abnormal assessments?
Reassessment/Evaluation: What was your patient's response to the intervention?

Patient Problem	Time	Relevant Assessments	Time	Multidisciplinary Team Intervention	Time	Reassessment/Evaluation
1	1507	Hgb: 7, Hct: 21%; RBC: 2.7. Blood type A-. Positive fecal occult blood in stool.	1650	Asked pt about previous blood transfusion reactions & administered 2 units PRBC. Verified procedure w/ charge nurse.	1930	T: 38.8 (101.8), HR: 96, RR: 22, BP: 103/60. Face is pallor and pt is restless. Pt reports having a headache. No S/Sx of bleeding.
1	1630	Pt states she feels like she is going to faint and throw up. Pallor in face.	1630	Provide emesis basin & cold cloth for forehead	1635	No longer c/o feeling like she is going to faint or needs to throw up.
1 / 2	1930	T: 38.8 (101.8), HR: 96, RR: 22, BP: 103/60. Face is pallor and pt is restless. Pt reports having a headache. Pain at a 6/10.	2000	Stopped blood transfusion and notified provider. Administered Tylenol 650 mo PO.	2015	T: 37.7 (99.8)
1	1507	Stool positive for occult blood. NSS running at 150mL/hr	2015	Doctor recommended & educated about endoscopy next AM. Doctor decreased IVF to 30mL/hr	NEXT DAY 1600	Surgeon found active bleeding & resolved it. Hgb: 8, Hct: 24%

2	1/19 NEXT DAY @ 1600	Pain: 8/10, stating "cramping and discomfort in stomach" in RLQ.	1600	Administered morphine sulfate 4mg IV bolus q2hr for pain over 4 minutes	1630	Reports "feeling so much better." Pain: 2/3-10. Denies soreness or cramping.
3	1700	Describes having a stressful job and drinking a few glasses of wine after coming home from a long train ride. Pt describes having a frozen dinner w/ 2 glasses of wine.	1705	Nurse provides alternative coping strategies: light, regular exercise, journaling, listening to music, getting enough sleep, and enhancing support system Nurse recommends having a diet high in protein, and eating small, frequent meals throughout the day.	1710	Feels relieved to have a plan and a guide for better eating and ways to reduce stress after d/c.
3	1730	Describes taking Ibuprofen when she is stressed and gets a headache.	1730	Nurse educated pt on why to discontinue use of Ibuprofen.	1735	Verbalized understanding of not taking Ibuprofen anymore.

ATI Virtual Clinical Questions and Reflection:

- 1) Identify two members of the healthcare team collaborating in the care of this patient:
 - a. **Nurse Esther**
 - b. **Dr. March**
- 2) What were three steps the nursing team demonstrated that promoted patient safety?
 - a. The ED nurse completed bed-side shift report over the phone & at the bedside to promote pt safety. This allowed the pt to hear the plan of care.
 - b. Nurse Esther immediately stopped the blood transfusion after realizing that the pt was having a reaction.
 - c. The nurse asked the doctor to order an antipyretic to reduce the fever from the transfusion reaction. The doctor promoted safety by ordering Tylenol vs. Ibuprofen due to the pt's Hx of intermittent gastritis.
- 3) Do you feel the nurse and medical team utilized therapeutic communication techniques when interacting with individuals, families, and health team members of all cultural backgrounds?
 - a. If **yes**, describe:
 - i. The ED nurse stayed with the pt while she was bringing her up to the medical surgical unit, promoting continuity of care for the pt.
 - ii. The nurse had a very comprehensive SBAR for the doctor when describing the blood transfusion reaction, thinking of possible suggestions for Tylenol and changing the IVF rate.
 - iii. The nurse took time to talk to the pt about d/c planning, especially r/t diet and stress management. She also made sure to tell the pt to avoid Ibuprofen, as it can increase irritation of the stomach and intestines, and also to avoid foods high in fiber that can obstruct her stoma.
 - b. If **no**, describe: _____

Reflection

- 1) Go back to your Preconference Template:
 - a. Indicate (circle, star, highlight, etc.) the components of your preconference template that you saw applied to the care of this patient.
- 2) What was the priority nursing problem? Provide rationale.
 - a. Deficient fluid volume. The pt had occult blood in her stool, and showed active bleeding during the endoscopy.
- 3) Review your Patient Problem Form: Did you see many of your anticipated nursing assessments and interventions used?
 - a. Were there interventions you included that *were not* used in the scenario that could help this patient?

i. If **yes**, describe:

ii. If **no**, describe:

1. I had assumed that if a pt has a fluid volume deficit, they would increase IVF rate. In this scenario, they decreased her rate from 150mL/hr to 30mL/hr.

4) After completing the scenario, what is your patient at risk for developing?

a. Acute Blood Loss Anemia

- i. Why? Pt had an active blood loss that was found during the endoscopy. Before that, she had a blood transfusion reaction, so it had to be stopped. Further, her Hgb was 8 and Hct 21% at discharge.

b. Recurrent GI bleeds

- i. If pt continues to eat bad, excessively drink alcohol, not work out, and take too much Ibuprofen, she is at risk for more bleeding and abdominal pain.

5) What was your biggest “take-away” from participating in the care of this patient? How did this impact your nursing practice?

- a. My biggest take away would be the pt having a blood transfusion reaction. In lecture, there are so many S/Sx of different disorders but seeing clinical manifestations of such a severe reaction is very important. I learned that if the pt is feeling restless, c/o a headache, and has a fever, that I need to stop the transfusion immediately and call the provider.