Lower GI Conditions

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Anatomy of the Lower GI Tract

Consists most of small intestine and all of large intestine. Small intestine is further subdivided into:

- Duodenum
- Jejunum
- Ileum

Large Intestine divides into:

- Cecum
- Colon
- Rectum
- Anal canal
Diarrhea

- Is most commonly defined as an increase in stool frequency or volume, and an increase in looseness of stool
- Can result from alterations in GI motility, increased fluid secretion, decreased fluid absorption or a combination of all of these
- Acute diarrhea should be considered infectious until the cause is found
- Patients on antibiotics can get a serious bacterial infection known as C. difficile
In diarrhea, the intestinal muscles contract too rapidly, expelling their contents frequently in very loose or fluid form. Fluids and nutrients are lost, and dehydration threatens.
Types of Diarrhea

Acute diarrhea- three or more bowel movements per day of a decreased form lasting for less than 2 weeks.

Chronic diarrhea- when a person experiences loose, mushy or watery stools (types 5, 6, or 7 on the Bristol Stool Scale).

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<th>Bristol Stool Scale</th>
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Fecal Incontinence

- The involuntary passage of stool due to the disruption of the normal structures for continence
- Risk factors:
  - Constipation
  - Diarrhea
  - Fecal impaction (accumulation of hardened feces that are unable to move in the rectum and sigmoid colon)
  - Different types of diseases causing loss of mobility (Bed ridden)
- Prevention and treatment of fecal incontinence can be managed by implementing a bowel training program.
- The treatment success of FI depends upon a thorough assessment of what causes it and how easily this problem is being managed
- The exact treatment of choice relies on the cause and severity of the underlying disease that results to FI, and the general health status and motivation of the person to cooperate in the treatment plan
Constipation

- A decrease in the frequency of bowel movements from what is considered “normal”, such as:
  - hard difficult to pass stools
  - a decrease in stool volume,
  - retention of feces in the rectum
  - a combination of all these

- A common complication due to chronic constipation are hemorrhoids

- Hemorrhoids result from venous engorgement due to repeated executions of the Valsalva manoeuvre and venous compression from hard impacted stool

- To treat constipation, the goals are to increase the fluid and fibre intake, and increase physical activity so that soft and formed stool can be passed without any bleeding hemorrhoids
Constipation

- poor diet
  - low in fiber
- emotional stress
- other medical conditions
10 Causes Of Constipation

- Not Eating Enough Fiber
- Not Drinking Enough Water
- Out Of Balance Gut Bacteria
- Certain Medications
- Too Much Supplemental Calcium or Iron
- Eating Too Much Dairy
- Eating Too Much Sugar & Unhealthy Fats
- Depression
- Lack of Physical Activity
- Laxative Abuse
Acute Abdominal Pain

- Is a symptom of many different types of tissue injury which can because of damage to abdominal or pelvic organs/blood vessels and mainly causes pain
- The goal to treat the pain is to identify and treat the cause, as well as, monitor and treat any complications
- Complete bowel obstruction, acute peritonitis and paralytic ileus can be illustrated by diminished or absent bowel sounds
- The outcomes for patients with acute abdominal pain include:
  - resolution of the cause of pain
  - relief of pain
  - freedom from complications
  - normal nutritional status
Chronic Abdominal Pain

- Can be caused due to:
  - Inflammatory bowel syndrome (IBS)
  - Diverticulitis
  - Peptic Ulcer Disease
  - Chronic Pancreatitis
  - Hepatitis
  - Cholecystitis
  - Pelvic Inflammatory Disease
  - Vascular Insufficiency
Abdominal Trauma

- Can most often occur due to blunt trauma or penetration injuries (ex: motor vehicle accident or gunshot/stab wounds)
- It causes damage to the internal organs
- Common injuries include:
  - Lacerated liver
  - Ruptured spleen
  - Pancreatic trauma
  - Mesenteric artery tears
  - Diaphragm, stomach or intestinal rupture
  - Urinary bladder rupture
  - Great vessel tear
  - Renal injury
Irritable Bowel Syndrome (IBS)

- Is a chronic functional disorder characterized by intermittent and recurrent abdominal pain that alternates the function of the bowel (constipation, diarrhea, or both)
- Common symptoms include: abdominal distress, excessive flatulence, bloating, urge to defecate, urgency, and sensation of incomplete evacuation
- Factors that start IBS symptoms include:
  - Neurological hypersensitivity within the GI nerves
  - Physical/emotional stress
  - Dietary issues
  - Antibiotic use or chronic alcohol abuse
  - GI infection or abnormalities
  - Bile acid malabsorption
  - Acute infection or inflammation of the intestine (traveller’s diarrhea)
Irritable Bowel Syndrome Video

The following video describes a condition known as Irritable Bowel Syndrome which affects the large intestine. It begins with the structure of the large intestine and the various parts of it along with their functions. The functioning of the large intestine in terms of muscular contractions is shown and the cause for IBS is then explained.

https://www.youtube.com/watch?v=bfWadK2jLvk
Irritable Bowel Syndrome

**Risk Factors**
- Psychosocial stressors:
  - anxiety
  - stress
  - depression

**Subtypes**
- IBS w/ Constipation (IBS-C)
- IBS w/ Diarrhea (IBS-C)
- Unsubtyped IBS

**Pathophysiology**
- Visceral hypersensitivity (common)
  - exaggerated response to cholecystokinin
  - altered response to meal ingestion
- Δ altered bowel motility (diarrhea or constipation)
  - low grade inflammation (in some IBS-D patients)

**Brain-Gut Dysregulation**
- Peripheral mechanisms
  - gut-based 5-HT₃ signaling
  - local reflexes
  - altered microflora
- Altered mucosal permeability
- Intestinal irritants (food products)
- Inflammation

**Treatments**
- Counseling / Stress Management / Diet
- Physical activity (increased exercise)
- Laxatives (IBS-C)
  - osmotic laxatives (PEG)
  - Cl-channel activator (lubiprostone)
  - guanylate cyclase agonist (linaclotide)
- Antidiarrheals (IBS-D)
  - loperamide
  - bile acid sequestrants (e.g. cholestyramine)
  - 5-HT antagonists (alosetron)
- Antibiotics (IBS-D)
  - rifaximin

**Abdominal Pain**
- antispasmodics
- tricyclic antidepressants (low dose)
- SSRIs?
Inflammatory Disorders

- There are several different types of inflammatory disorders. These include:
  - Appendicitis
  - Peritonitis
  - Gastroenteritis
  - Inflammatory bowel disease (IBD)
    - ex: Crohn’s disease & ulcerative colitis
Appendicitis

- Typically begins with periumbilical pain, which is followed by anorexia, nausea, and vomiting
- The pain is constant and continues until it shifts to the RLQ and localizes at the McBurney point
- Most common causes include: occlusion of the appendiceal lumen by accumulated feces and intramural thickening due to hyper growth of lymphoid tissue = obstruction that leads to edema, venous engorgement, and bacterial invasion -> gangrene & perforation
- NPO until seen by health care provider to ensure that the stomach is empty if surgery is needed
E.R. physician Dr. Travis Stork explains the function of the appendix and what can happen if it ruptures.

https://www.youtube.com/watch?v=r2zsbdPBhGY
Peritonitis

- Results from a localized or generalized inflammatory process of the peritoneum
- To help determine the cause of peritonitis, an assessment of the patient’s abdominal pain is important
- The most common symptom is abdominal pain
- A universal sign of peritonitis is tenderness all over the involved area
- Other symptoms include:
  - rebound tenderness
  - muscular rigidity
  - Spasms

Dr. Carlo Oller, emergency physician, talks about peritonitis

https://www.youtube.com/watch?v=1MX9xQGvOU

CAUSES
Some of the main causes of peritonitis include:

1. Spontaneous infection of the abdominal cavity, usually due to cirrhosis or ascites
2. Organ perforation in the abdomen, possibly due to surgery, abdominal injury, or a burst appendix
3. Obstruction or a hole in the intestines
4. A reaction due to release of pancreatic enzymes, either due to perforation or inflammation
Normal Digestive System

Inflamed Digestive System

Inflammation of the Peritoneum
CAUSES

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2. Organ perforation in the abdomen, possibly due to surgery, abdominal injury, or a burst appendix
3. Obstruction or a hole in the intestines
4. A reaction due to release of pancreatic enzymes, such as in acute pancreatitis
Gastroenteritis

- An inflammation of the stomach and small intestine’s mucosa
- If the causative agent is identified, antibiotics and antimicrobial drugs can be given
- Symptoms include:
  - Nausea
  - Vomiting
  - Diarrhea
  - Abdominal cramping
  - Distention
- Nursing care is given for symptoms of nausea, vomiting, and diarrhea
What is Gastroenteritis?

The following video explains what is and what causes gastroenteritis.

https://www.youtube.com/watch?v=L8oqpySgAr8
Inflammatory Bowel Disease

- An autoimmune disease characterized by idiopathic inflammation and ulceration
- Crohn’s disease and ulcerative colitis (UC) are immunologically related disorders that are referred to IBD
- Characterized by mild to severe acute exacerbations that can happen unpredictably over several years
- UC is a disease of the colon and rectum
- UC starts in the rectum and moves toward the cecum, but sometimes inflammation can be found in the terminal ileum
- The primary symptoms of UC include bloody diarrhea & abdominal pain
- Crohn’s disease can occur anywhere in the GI tract, but occurs mostly in the terminal ileum and colon
Inflammatory Bowel Disease Continued

- Crohn’s disease: Inflammation involves all layers of the bowel wall with segments of normal bowel occurring between diseased portions.
- Crohn’s disease can cause symptoms of diarrhea & colicky abdominal pain.
- Weight loss can occur if the small intestine is involved due to malabsorption.
- Fever can also result from Crohn’s disease.
- Goals for treatment include: resting the bowel, controlling the inflammation, combating infection, correcting malnutrition, alleviating stress, providing symptomatic relief & improving quality of life.
Inflammatory Bowel Disease

Healthy

Crohn's disease

Ulcerative colitis

Fat wrapping

Muscle hypertrophy

Fissures

Cobblestone appearance

Ulceration within the mucosa
Treating IBD

- The medication classes that can be used to treat IBD are: aminosalicylates, antimicrobials, corticosteroids, immunosuppressants & biological therapy.

- If the patient with IBD fails to respond to treatments, exacerbates frequently and debilitatingly, has massive bleeding, perforation, strictures, obstruction, tissue changes= dysplasia, or carcinoma develops, surgery may have to be done.

- Nursing care is focused on hemodynamic stability, pain control, fluid and electrolyte balance & nutritional support during an acute exacerbation of IBD.

- Nurses can aid patients with accepting the chronicity of IBD and can learn strategies to help the patient with coping with its recurrent & unpredictable nature.
Malabsorption Syndrome

- Results from impaired absorption of fats, carbohydrates, proteins, minerals & vitamins
- Causes include:
  - Biochemical or enzyme deficiencies
  - Bacterial proliferation
  - Disruption of small intestine mucosa
  - Disturbed lymphatic & vascular circulation
  - Surface area loss
- The most common symptom is: steatorrhea, which is bulky, foul-smelling, yellow-grey, greasy stools with putty-like consistency
Celiac Disease

- Is an autoimmune disease characterized by damage to the small intestinal mucosa from the ingestion of wheat, barley & rye
- Genetic predisposition, gluten ingestion & immune-mediated response are 3 factors that can develop this gluten intolerance
- Signs of this disease include: foul-smelling diarrhea, steatorrhea, flatulence, abdominal distension & symptoms of malnutrition
- If diagnosed and treated early it can prevent complications such as cancer, osteoporosis & other autoimmune diseases
- It is treated with lifelong avoidance of dietary gluten
CELIAC DISEASE

- Genetic Predisposition
- Immune Mediated Disorder
- Gluten Exposure/Intolerance
- Reduced Absorption of Calcium, Iron, Vitamins A, D, E, K and Folate
- Inflammatory Injury of the Small Intestine
Lactase Deficiency

- Is a condition where the lactase enzyme is deficient or absent
- Lactase breaks down lactose into glucose and galactose
- Symptoms include: bloating, flatulence, cramping abdominal pain & diarrhea
- Symptoms can occur within half an hour to several hours after ingesting a dairy product
- Treatments consists of eliminating lactose from the diet and replacing it with commercially available preparations
**Pathophysiology of Lactose Intolerance.** SCFA = Short-Chain Fatty Acids.
Short Bowel Syndrome

- Also known as (SBS) results from surgical resection, congenital defect or disease-related loss of absorption
- Characterized by failure to maintain protein-energy, fluid, electrolyte & micronutrient balances on a standard diet
- Length and portions of the small bowel resected depends on the number and severity of symptoms
- The common symptoms include: diarrhea, steatorrhea & weight loss
- Sometimes there may be signs of malnutrition & multiple vitamin & mineral deficiencies
Short Bowel Syndrome or Short Gut Syndrome

Before Surgery

- Liver
- Stomach
- Gallbladder
- Large Intestine
- Small Intestine

After Surgery
Intestinal Obstruction

- Occurs when a partial or complete obstruction of the intestine prevents intestinal contents from passing through the GI tract.
- Caused by either mechanical or nonmechanical obstruction:
  - Mechanical obstruction: caused by an occlusion of the lumen of the intestinal tract.
  - Nonmechanical obstruction: result from a neuromuscular or vascular disorder.
- Can be a life-threatening problem.
- Carcinoma, volvulus & diverticular disease are mechanical causes for large bowel obstruction.
- Paralytic ileus is the common nonmechanical cause for obstruction.
- There is retention of fluid in the intestine & peritoneal cavity = severe reduction in circulating blood volume -> hypotension & hypovolemic shock.
- If the bowel is strangulated, emergency surgery is performed.
Polyps of the Large Intestine

- Most common types of polyp are hyperplastic & adenomatous
  - Hyperplastic polyps - start from the epithelium & are non-neoplastic growths; they never cause clinical symptoms
  - Adenomatous polyps - characterized by neoplastic changes in the epithelium & are closely linked to colorectal adenocarcinoma
- Familial adenomatous polyposis (FAP) is the common hereditary polyp disease
Colorectal Cancer

- Is the 2nd leading cause of cancer-related deaths in Canada
- Most common symptom: rectal bleeding but other other symptoms include: alternating constipation & diarrhea, change in stool calibre and sensation of incomplete evacuation
- Cancers of right side are usually asymptomatic; may have vague abdominal discomfort or cramping/colicky abdominal pain
- Colonoscopy is the standard for colorectal cancer screening & digital rectal examinations can catch rectal cancers that are within the reach of a finger
- Surgery includes an abdominal-perineal resection
- Chemotherapy is used after the colon resection & is the primary treatment for nonresectable colorectal cancer
- Goals for the patient: appropriate treatment, normal bowel elimination patterns, relief of pain, feelings of comfort & quality of life appropriate to disease progression
- Psychosocial support for patient and family is important
The following video explains colon cancer

http://stfrancismedical.adam.com/content.aspx?productId=117&pid=1&gid=000262
Ostomy Surgery

- Used when the normal elimination route is no longer possible
- 2 major nursing care aspects:
  - Emotional support as the patient copes with a radical change in body image
  - Patient teaching about the many aspects of stoma care & the ostomy
- Before surgery the bowel is prepared so the intestines are empty = decreases chance of post-op infection due to bacteria in the feces
- Assessments of the stoma and provisions of a pouching system that protects the skin & contains the drainage and odour must be done post-op
- Colostomy irrigations can be used to stimulate emptying of the colon to achieve a regular bowel pattern
- Puch change should be performed by patient, as well as, proper skin & stoma care,
The following video explains what a colostomy is

https://www.youtube.com/watch?v=XscbQTemf_g
Ileostomy Care

- Patient should be observed for signs & symptoms of fluid and electrolyte imbalance (potassium, sodium & fluid deficits)
- Nerve and vascular supply to genitals can be disrupted by pelvic surgery
- Radiation therapy, chemotherapy & medications can also alter sexual function
- Concerns regarding stomas include:
  - The ability to resume sexual activity & effect on daily activities
  - Altering clothing styles
  - Sleeping while wearing a pouch
  - Passing gas
  - Presence of odour and cleanliness
  - Whether to tell others about stoma

The following video shows a step-by-step guide to applying a 2 piece stoma bag - applying the flange and attaching the bag: https://www.youtube.com/watch?v=hz2iszY7BV1
Diverticulosis and Diverticulitis

- Diverticulum is an outpouching of the mucosa through the circular smooth muscle of the intestinal wall
- Can occur at any point in the GI tract but commonly found in the sigmoid colon
- Diverticular disease covers a spectrum from asymptomatic, uncomplicated diverticulosis to diverticulitis with complications such as: perforation, abscess, fistula & bleeding
- Diverticular disease affects 5% of the age 40 population and 60% of the age 85 population
- Symptomatic diverticular disease can be broken into painful diverticular disease & diverticulitis
- Diverticulitis complications include perforation & peritonitis
- High-fiber diets and bulk laxatives can treat uncomplicated diverticular disease
- The goal treatment of acute diverticular is to allow the colon to rest and inflammation to subside; NPO status with parenteral fluids & broad-spectrum antibiotic therapy
Hernias

- A protrusion of a viscous through an abnormal opening or a weakened area in the wall of the cavity in which it is normally contained
- If it becomes strangulated, the patient will experience severe pain & symptoms of bowel obstruction
- These symptoms include:
  - Vomiting
  - Cramping abdominal pain
  - Distension
Anorectal Problems

- **Hemorrhoids** - dilated hemorrhoidal veins that can be internal or external
  - Nursing management includes teaching measures to prevent constipation, avoidance of prolonged standing/sitting, proper use of OTC drugs & need to seek medical care for severe symptoms

- **Anal fissure** - skin ulcer or a crack in the lining of the anal wall that is caused by trauma, local infection or inflammation

- **Anal fistula** - abnormal tunnel leading out from the anus or the rectum; can extend to the outside of the skin, vagina or buttocks
  - Complication of Crohn’s disease and often precedes an anorectal abscess

- **Pilonidal sinus** - small tract under the skin between the buttocks in the sacrococcygeal area
  - Nursing care includes warm, moist heat application
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https://www.youtube.com/watch?v=r2zsbdPBhGY

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