The objectives of Article: -

that the student should be able to know:
- General objectives:
  - General information about internal medicine, surgical and basic needs of the patient and provide comfort and complete care for patients to meet their needs.

Specific Objectives:

- Providing nursing care to patients before and after surgery and nursing care for patients with gastrointestinal diseases and respiratory and urinary tract diseases, twisting and heart disease and diseases of ear, nose, throat and skin and eye diseases. Providing nursing care in the recovery unit CCU unit ICU.

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- Smith & Ghips " Medical Surgical Nursing Philadelphia 2000 .

Medical - Surgical Nursing

*Health* as a “state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity.

Factors effect on the health:

1. The rest
2. Exercises
3. Nutrition
4. Clothes
5. Cleanliness

Patients Basic Needs

1. Physiological Needs:
   - Rest and Sleep
   - Nutrition and Fluid
   - Exercises
   - Personal Hygiene
   - Elimination

2. Safety & Security Needs: The patient has many fears from;
   - The different persons with unfamiliar function who enter his room.
   - Diagnostic tests.
   - Therapeutic procedures.
   - So the nurse may help the patient to feel safe and secure.

3. Aesthetic needs:
   - Room
   - Bed
   - Sound
   - Crowding

4. Emotional & Spiritual needs.
5. need to Know and Understand.
6. Diversion and Recreation (pastime & amusement needs).
7. Mental Hygiene.

Some causes lead to the discomfort the patient:

- Head ache
- Pain
- Dizziness
- Muscles spasm
- Nausea and Vomiting
- Distention of abdominal
- Hunger
- Thirst (Dehydration)
- Acute Sneezing
- Insomnia

**preoperative and postoperative Nursing care**

**Preoperative Phase:**

The preoperative phase begins when the decision to proceed with surgical intervention is made and ends with the transfer of the patient onto the OR table. The scope of nursing activities during this time involves establishing a baseline evaluation of the patient before surgery by carrying out a preoperative interview (which includes a physical and emotional assessment, previous anesthetic and medical history, and identification of known allergies or genetics issues that may affect the surgical outcome).

The traditional steps to prepare the patient as follows:

1. Check Vital Signs (Temperature, Pulse, Respiration, and Blood pressure) are indicators of health status.

2. Physical examination and laboratory test and Investigations.

3. Note any abnormal signs on the patient (Rash, Pale, cyanosis).

4. Prevent the patient from the smoking and Prevent from take some drugs such as Diuretics, Anti Coagulants drugs and take sedatives drugs before (1/2) hours.

5. Care for nutrition and Balance the Fluid and Electrolytes (stopped eating and drinkable before (6) hours from operation) and check intake and output fluid (I.V fluid, Naso gastric (NG) tube, Catheterization - foly catheter).

6. Personal Hygiene, location of operation (bath, shaving and sterilization and skin care).

7. Rest and Physiological support.
8. care of valuables for patient.

9. Prepare the patient chart (record the Allergy) Personal data (name, gender, age. e.g.) and operation permit to the patient.

10. Transportation of the patient to the operation room.

:: Immediate post operative complication during (24) hours::

1. hemorrhage
   - External Bleeding
   - Internal Bleeding
2. Shock
3. Hypoxia
4. Cardiac Arrest

Postoperative Phase

The postoperative phase begins with the admission of the patient to the post anesthesia care unit (PACU) and ends with a follow-up evaluation in the clinical setting or home. The scope of nursing care covers a wide range of activities including maintaining the patient's airway, monitoring vital signs, assessing the effects of the anesthetic agents, assessing the patient for complications, and providing comfort and pain relief. Nursing activities also focus on promoting the patient's recovery and initiating the teaching, follow-up care, and referrals essential for recovery and rehabilitation after discharge.

The traditional steps to prepare the patient as follows:

1. Bed rest and Physiological support.
2. Personal Hygiene, observation the location of operation (dressing, sterilization and skin state).
3. Check Vital Sings (Temperature, Pulse, Respiration, and Blood pressure).
4. Postoperative medication.
5. check intake and output fluid.
6. Care for nutrition of patient (I.V fluid then full liquid diet, soft diet, ↑ vit C).
7. Encouragement the patient on deep breathing and early movement and walking after operation.
8. Care of dressing (relive the Stitches after 7–8 days after operation).
9. Care of drainage tube, cannula and Foley catheter.
10. Note any abnormal signs on the patient (Rash, Pale, cyanosis, Dyspnea) and any complication and ask the doctor about signs.

:: Post operative complications ::

- Vomiting
- Pain
- Retention of Urine
- Constipation
- Distention
- Paralytic ileus
- Pneumonia & Bronchitis
- Thrombosis
- Thrombophlebitis
- Pulmonary Embolism
- Wound Infection & Disruption

The Nursing Process

Definition
The nursing process is a deliberate problem-solving approach for meeting people's health care and nursing needs.
The traditional steps are defined as follows:

- Assessment: The systematic collection of data to determine the patient's health status and any actual or potential health problems. (Analysis of data is included as part of the assessment. Analysis may also be identified as a separate step of the nursing process).

Physical Assessment

Inspection:

The first fundamental technique is inspection or observation. General inspection begins with the first contact with the patient. Introducing oneself and shaking hands provide opportunities for making initial observations: Is the person old or young? How old? How young? Does the person appear to be his or her stated age? Is the person thin or obese? Does the person appear anxious or depressed? Is the person's body structure normal or abnormal? In what way, and how different
from normal? It is essential to pay attention to the details in observation. Vague, general statements are not a substitute for specific descriptions based on careful observation.

**Palpation:**

Palpation is a vital part of the physical examination. Many structures of the body, although not visible, may be assessed through the techniques of light and deep palpation. Examples include the superficial blood vessels, lymph nodes, thyroid gland, organs of the abdomen and pelvis, and rectum. When the abdomen is examined.

**Percussion:**

The technique of percussion translates the application of physical force into sound. It is a skill requiring practice that yields much information about disease processes in the chest and abdomen. Percussion allows the examiner to assess such normal anatomic details as the borders of the heart and the movement of the diaphragm during inspiration. It is also possible to determine the level of a pleural effusion (fluid in the pleural cavity) and the location of a consolidated area caused by pneumonia or atelectasis (collapse of alveoli). The use of percussion is described further with disorders of the thorax and abdomen.

**Auscultation:**

Auscultation by stethoscope is the skill of listening to sounds produced within the body created by the movement of air or fluid. Examples include breath sounds, the spoken voice, bowel sounds, heart sounds, and cardiac murmurs. Physiologic sounds may be normal (e.g., first and second heart sounds) or pathologic (e.g., heart murmurs in diastole, crackles in the lung). Two end-pieces are available for the stethoscope: the bell and the diaphragm. The bell is used to assess very-low-frequency sounds such as diastolic heart murmurs. The entire surface of the bell's disk is placed lightly on the skin surface to avoid flattening the skin and reducing audible vibratory sensations. The diaphragm, the larger disk, is used to assess high-frequency sounds such as heart and lung sounds and is held in firm contact with the skin surface. Touching the tubing or rubbing other surfaces (hair, clothing) during auscultation is avoided to minimize extraneous noises.
Diagnosis: Identification of the following two types of patient problems:

Nursing diagnoses: Actual or potential health problems that can be managed by independent nursing interventions.

Collaborative problems: Certain physiologic complications that nurses monitor to detect onset or changes in status. Nurses manage collaborative problems using physician-prescribed and nursing-prescribed interventions to minimize the complications of the events.

Planning: Development of goals and outcomes, as well as a plan of care designed to assist the patient in resolving the diagnosed problems and achieving the identified goals and desired outcomes.

Implementation: Actualization of the plan of care through nursing interventions.

Evaluation: Determination of the patient's responses to the nursing interventions and the extent to which the outcomes have been achieved.

Digestive system

The gastrointestinal (GI) system begins with the mouth and ends with the anus. The gastrointestinal system includes the alimentary canal. It is approximately 25 feet in length in the adult. The primary functions of the GI system are digest food, absorb nutrients, and waste elimination. Parts of the GI tract include (mouth, esophagus, stomach, small intestine, large intestine, rectum) and accessory organs (tongue, teeth, salivary glands, liver, pancreas, gallbladder) and ducts.
Diseases of the Digestive system

Peptic Ulcer

When a body’s defense mechanisms fail to protect the stomach lining from acid and pepsin, an ulcer can develop. Peptic ulcer disease is a descriptive term used for ulcer disease of either the duodenal or gastric type. An ulcer is referred to as duodenal, gastric, or esophageal, depending on its location in the gastrointestinal system. The two most common locations are the duodenum and gastric area; therefore, duodenal ulcers are erosions that occur on the mucosal lining of the duodenum, and when the erosion occurs in the gastric mucosa, the ulcer is classified as gastric.
Several factors causes & contribute to the development of an ulcer, including the following:

- Irritants that increase the secretion of hydrochloric acid; non steroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen or Toradol; and steroids.
- Stress can cause hypersecretion of acid, which plays a part in ulcer development.
- *Helicobacter pylori* (*H. pylori*) bacteria causes ulcers and can be transmitted from person to person. Peptic ulcers result from infection with the gram-negative bacteria *H. pylori*, which may be acquired through ingestion of food and water. Person-to-person transmission of the bacteria also occurs through close contact and exposure to emesis.
- A family history of genetic predisposition to ulcers is a contributing factor.
- People with blood type O are more susceptible to peptic ulcers than are those with blood type A, B, or AB; this is another genetic link.
- The Zollinger-Ellison syndrome (ZES) consists of severe peptic ulcers, extreme gastric hyperacidity.
- Alcohol abuse & Smoking.
Sings and symptoms

1. dysphagia
2. left epigastric pain 1 to 2 hours after eating
3. anorexia and Weight loss
4. hematemesis
5. melena
6. Nausea and vomiting
7. Relief of pain after administration of antacids

Diagnostic Tests

1. Barium meal
2. Gastroscopy
3. Complete blood count
4. Stool test

Nursing Care and Management

1. Maintain the patient's diet with small frequent feeding
2. Keep the patient in semi-Fowler's position
3. Maintain a quiet environment & reduce the stress
4. Assess respiratory and cardiovascular status
5. Observation the stool and vomiting
6. Avoid alcohol and caffeine and stop smoking and reduce the anxiety
7. Know the action, side effects, and scheduling of medications

The Complication:

1. Hemorrhage
2. perforation
3. chemical peritonitis
4. Intestinal obstruction

Surgical intervention

1. vagotomy
2. pyloroplasty
3. Bilroth I (Gastroduodenostomy)
4. Bilroth II (Gastrojejunostomy)
Intestinal Obstruction

Anything that interferes with the intestinal content (fluid, gas, gastric secretions) passing through the intestinal tract can cause a blockage or an intestinal obstruction.

Etiology of Intestinal obstruction

1. Adhesions.
2. Hernias.
3. Tumors.
4. Fecal.
5. Mesenteric thrombus.
6. Paralytic ileus.
7. Diverticulitis.
8. Inflammation.

Sings and symptoms

1. Cramping pain.
2. Nausea.
3. Abdominal distention.
4. Vomiting fecal material.
5. Constipation.
7. Weight loss.
8. Diminished absent bowel sounds.

Diagnostic Tests

1. Abdominal X-Ray.
2. Barium enema.
3. CT scan.
4. Ultrasound.

Nursing Care and Management

1. Withhold food and fluids.
2. Administer I.V fluids.
3. Assess bowel sounds.
4. Measure and record the patient's abdominal girth.
5. Monitor and record the frequency, color, and amount of stools.
6. Keep the patient in semi-flower's position.
7. Provide nares and mouth care.

The complications

1. Peritonitis.
2. Strangulation of bowel.
3. Infection.
4. Sepsis.
5. Bowel necrosis.

Surgical Interventions

1. Resection of the bowel.
2. Colostomy.

Peritonitis

Localized or generalized inflammation of peritoneal cavity.

Etiology

1. Bacterial infection.
2. Pancreatitis.
3. Trauma.
4. Volvulus.
5. Inflammation of colon or kidneys.
6. Intestinal ischemia.
7. Intestinal obstruction.
8. Peptic ulceration.
11. Cirrhosis.
12. Intestinal perforation.
Sings and symptoms

1. Abdominal pain.
2. Malaise.
3. Nausea.
4. Anorexia.
5. Elevated temperature.
6. Abdominal rigidity and distention.
7. Decreased urine output.
8. Weak, rapid pulse.
10. Decreased peristalsis.
11. Decreased or absent bowel sounds.
12. Abdominal resonance and tympani on percussion.

Diagnostic tests

1. Abdominal X-Ray.
2. CT scan.
4. Ultra sound.
5. Peritoneal large to Analyze fluid for WBC count, bacteria, bile.

Nursing care and Management

1. I.V fluids withhold food and fluids.
2. Administer medications, as prescribed.
3. Assess bowel sound.
4. Measure and record the patient's abdominal girth.
5. maintain bed rest and Assess pain.
6. Avoid giving the patient laxatives.
7. Don't apply heat to the patient's abdominal.

Complication

1. Adhesions.
2. Abscesses.
3. Obstruction.
4. Septic shock.
5. Paralytic ileus.
Surgical Interventions

1. Exploratory laparotomy.
2. Bowel resection.
3. Incision and drainage of abscess.

**Appendicitis**

Is an infection of the Appendix, and it is right lower quadrant of the abdominal cavity, is common in teens and young Adult and more common in males than females. Pain localizes at MCBurney's point (located between the umbilicus and right anterior ilias crest).

**Etiology**

1. Result from fecalith (hardened mass of stool).
2. Tumor.
3. Foreign body.
4. Infection.

**Signs and Symptoms**

1. Pain: Pain starts with epigastria or periumbilical pain and localizes to the right lower quadrant of the abdomen. (MCBurney's Point).
2. Low-grade fever.
3. Nausea and vomiting.
4. Rigidity and tenderness in the right lower portion of the abdominal.
5. Loss of appetite.
6. Rebound pain (pain when pressure on the abdomen is quickly removed) occurs with peritoneal inflammation.

**Diagnostic tests**

1. Complete cell blood count.
2. CT scan shows enlarged appendix or fecalith.
3. Ultra sound may show enlarged appendix.
5. Laparoscopy or Laparotomy to appendectomy.
Caution:

- Laxative and enemas and Analgesic drugs are contraindicated and can cause perforation in clients with appendicitis.
- If the appendix ruptures, The abdomen will be distended with un-localized abdominal pain.
- Appendectomy (surgical removal of the appendix) (may be done via laparoscopy – laparotomy).

Nursing care and Management

Pre – Operative care :

1. Reducing anxiety.
2. I.V infusion to replace fluid loss.
3. Antibiotic therapy to prevent infection.
4. Monitor vital signs.
5. Assess pain level for changes.
6. Monitor intake and output fluids.
7. Monitor bowel function.
8. Monitor abdomen for distention, presence of bowel sounds.

Post-Operative :

1. Monitor surgical site for appearance of wound, drainage.
2. Check vital signs.
3. Antibiotics postoperatively if needed.
4. Intravenous fluid until diet resumed.
5. Fowler's position.
6. Intake and output fluid.
7. Remove the stiches (5-7) days after the operation day.

Complications

* If perforation occurs it will lead to:
1. Generalized peritonitis.
2. Abscess in the Appendix location.
**Hernia**

protrusion of an organ or part of an organ through the wall of the cavity that normally contains it. This is also known as a diaphragmatic hernia. A part of the stomach protrudes up through the diaphragm near the esophagus into the chest. There are two types of hiatal hernias:

- *Sliding* or *rolling* hernia where the upper stomach and the gastroesophageal junction slide in and out of the chest cavity.
- *Paraesophageal* hernia where the stomach goes through the diaphragm beside the esophagus.

**Signs and Symptoms**

- Heartburn
- Difficulty swallowing (dysphagia)
- Chest pain
- Shortness of breath after eating
- Feeling of fullness after eating

**Assessment and Diagnostic Findings**

Diagnosis is confirmed by x-ray studies, barium swallow, and fluoroscopy.
Nursing Intervention

• Monitor vital signs.
• Assess abdomen for distention, bowel sounds.
• Teach patient about lifestyle modifications:
• Medication management.
• Not to lie down after eating.
• Elevate head of bed.
• Avoid wearing clothing that is tight at waist.
• Avoid acidic foods (citrus, vinegar, tomato), peppermint, caffeine, alcohol.
• Stop smoking.
• Lose weight if overweight.

Another type of hernia ::

* Indirect abdominal hernia :

Is common in the male at any age (three times than females)
- The hernia sac contains the peritoneum which contain the large or small intestine & bladder.
- The sac is filled only when the patient is on his feet, the content returning to the abdominal cavity as soon as he lies.

* Direct inguinal hernia : is common in males.

* Umbilicus hernia :
- is common in obese woman & children and in patients with cirrhosis & ascetic.

* Incisional hernia :
- due to pervious operations in which drainage was necessary , complete closure of the tissues being impossible.

* Femoral hernia : is more frequently in women.

Nursing management
• Pre – operative care :-

1. prepare the patient as any surgery.
2. check the patient whether having upper respiratory infection, chronic cough from smoking , or sneezing from (allergy).
3. Knowing the patient that may have difficulty securing employment because of this condition.

- **Post-operative care**: 

1. Moving at the day of, or after surgery.
2. Fluid and diet may restricted until peristalsis returns.
3. Catheterize the patient if necessary.
4. If there is scrotum pain, elevate it by a rolled towel and apply small ice bags to reduce pain & swelling.
5. Antibiotic & Narcotics.
6. In case of wound infection, local wound treatment and heat application followed by incision and drainage may required.
7. Instinct the patient to splint the incision site with the hands when cough or sneeze to lessen the pain and protect the incision site.
8. Nasogastric suction sometimes uses to prevent distention.
9. Restrict heavy lifting for (2) months after surgery.

**Ulcerative Colitis**

The inflammation occurs in the colon and rectum. The inflammation usually begins at the rectum and proceeds upward. This disease can result in systemic involvement with fatalities.

An inflammatory disease of the large intestine that affects the mucosal layer beginning in the rectum and colon and spreading into the adjacent tissue. There are ulcerations in the mucosal layer of the intestinal wall, and inflammation and abscess formation occur. Bloody diarrhea with mucous is the primary symptom.

**Symptoms are include the following:**

- Abdominal cramping
- Intermittent *tenesmus* (spasms involving the anal sphincter; persistent desire to empty bowel and contracting spasms in which there is a desire to empty the bowels)
- Vomiting
- Weight loss
- Fever
- Bloody diarrhea
• Rectal bleeding
• Abdominal pain
• Chronic bloody diarrhea with pus due to ulceration
• Electrolyte imbalance due to diarrhea

Diagnostic Assessment

• General stool examination & culture.
• Barium enema shows areas of ulceration and inflammation.
• Sigmoidoscopy or colonoscopy show ulcerations and bleeding.

Nursing Intervention

• Monitor intake and output.
• Monitor stool output, frequency.
• Weigh patient regularly.
• Sitz bath.
• Vitamin A & D ointment or barrier cream applied to skin.
• Witch hazel to soothe sensitive skin.
• Monitor for toxic megacolon (distended and tender abdomen, fever, elevated WBC, elevated pulse, distended colon).
• Teach home care for new ostomy patients or refer to enterostomal therapist for education:
• Teach proper skin care of perianal area to avoid skin breakdown.
• Teach dietary modification, and which foods to avoid.
• Teach medication use, schedule, and side effects.
• Teach importance of follow-up care.
• Teach wound care for postoperative patients.
• Keep stool diary to identify irritating foods.
• Low-fiber, high-protein, high-calorie diet.

Hepatic Cirrhosis

Cirrhosis is the scarring or fibrosis of the liver, which results in the distortion of the liver structure and vessels. The most common causes of cirrhosis are alcoholism and hepatitis.
The nodules that develop from cirrhosis can block the flow of blood in the liver. This process eventually shrinks the liver and can lead to complications that can be severe and life-threatening. One of the major complications is portal hypertension. 

There are three types of cirrhosis or scarring of the liver:

- **Alcoholic cirrhosis**, in which the scar tissue characteristically surrounds the portal areas. This is most frequently due to chronic alcoholism and is the most common type of cirrhosis.
- **Postnecrotic cirrhosis**, in which there are broad bands of scar tissue as a late result of a previous bout of acute viral hepatitis.
- **Biliary cirrhosis**, in which scarring occurs in the liver around the bile ducts. This type usually is the result of chronic biliary obstruction and infection (cholangitis); it is much less common than the other two types.

**Etiology**

1. Alcohol use or abuse
2. Malnutrition
3. Viral hepatitis
4. Cholecystitis

Signs and Symptoms

• Initially asymptomatic
• Weakness, fatigue due to chronic disease
• Muscle cramps
• Weight loss
• Anorexia
• Nausea with possible vomiting
• Ascites—the accumulation of fluid within the abdominal cavity due to portal hypertension
• Abdominal pain
• Portal hypertension
• Pruritus (itching)
• Ecchymosis (bruises) or petechiae (small, pinpoint, round, reddish purple marks)
• Amenorrhea
• Impotence due to inactivity of hormones
• Gynecomastia
• Jaundice due to problems with excretion of bilirubin
• Hepatomegaly (enlarged liver) in over one-half of the patients
• Constipation or diarrhea
• Deficiencies of vitamins A, D, E, and K, Coagulation defects due to problems with vitamin K absorption, causing problems with production of clotting factors
• Changes in behavior, cognition, and speech
• Elevations in liver enzymes.
• Peripheral edema
• Dyspnea due to pressure on diaphragm from ascites
• Redness of palms—palmar erythema

Diagnosis of Cirrhosis

Liver functions are complex, requiring many diagnostic tests. These tests determine the extent of the cirrhosis, and the type of treatment depends on the condition of the liver.
The test reviewer will need to know the following list of tests or exams important in diagnosing cirrhosis:
Laboratory tests (liver enzymes—elevated AST, ALT, LDH, prothrombin time prolonged, and increased ammonia levels)

Upper gastrointestinal x-ray

CT scan

Liver ultrasound

Esophagogastroduodenoscopy (EGD)

Liver biopsy

Interpreting Test Result

• Aspartate aminotransferase (AST) elevated.
• Alanine aminotransferase (ALT) elevated.
• Lactate dehydrogenase (LDH) elevated.
• Bilirubin direct (conjugated) and indirect (unconjugated) elevated.
• Urinary bilirubin elevated.
• Fecal urobilinogen decreased with biliary tract obstruction.
• Serum protein decreased.
• Serum albumin decreased.
• Anemia with elevated MCV, MCH.
• White blood cell (WBC) count low.
• Prothrombin time is prolonged due to changes in hepatic production of clotting factors.
• Platelet count low (thrombocytopenia).
• Ammonia level elevated as the disease advances.
• Abdominal x-rays show hepatomegaly.
• Abdominal CT scan shows hepatomegaly, ascites.
• Ultrasound shows hepatomegaly, ascites, portal vein blood flow.
• Liver biopsy shows fibrosis and regenerative nodules.
• Esophagogastroduodenoscopy (EGD) to detect esophageal varices.

Treatment

The treatment regimen for clients with cirrhosis is based on the symptoms the client is exhibiting. For example, if the client is retaining fluids, diuretics are prescribed. Diet interventions include a diet to promote healing of liver tissue. The client would need increased calories, increased proteins, and low-sodium food sources. Medications prescribed for clients with cirrhosis include antacids for gastric distress that could lead to bleeding, diuretics for fluid and ascites.
Nursing Intervention

• Monitor intake and output.
• Monitor vital signs.
• Weigh patient daily.
• Measure abdominal girth—making sure to measure at level of umbilicus for consistency; marks are typically made at sides of abdomen to align tape measure on subsequent days.
• Assess peripheral edema.
• Assess heart and lung sounds for excess fluid.
• Elevate head of bed 30 degrees or greater to ease breathing.
• Elevate feet to decrease peripheral edema.
• Monitor for signs of bleeding or bruising.
• Monitor level of consciousness, orientation, recent and remote memory, behavior, mood, and affect.

Medical Complication

1. Ascites
2. Esophageal varices
3. Hemorrhoids
4. Hemorrhage
5. Estrogen and androgen imbalance
6. Portal hypertension
7. Hepatic coma
8. Pancytopenia

*Jaundice*

When the bilirubin concentration in the blood is abnormally elevated, all the body tissues, including the sclerae and the skin, become yellow-tinged or greenish-yellow, a condition called jaundice. Jaundice becomes clinically evident when the serum bilirubin level exceeds 2.5 mg/dL (43 fmol/L). Increased serum bilirubin levels and jaundice may result from impairment of hepatic uptake, conjugation of bilirubin, or excretion of bilirubin into the biliary system. There are several types of jaundice: hemolytic, hepatocellular, obstructive, or jaundice due to hereditary hyperbilirubinemia. Hepatocellular and obstructive jaundice are the two types commonly associated with liver disease.
Hemolytic Jaundice

Hemolytic jaundice is the result of an increased destruction of the red blood cells, the effect of which is to flood the plasma with bilirubin so rapidly that the liver, although functioning normally, cannot excrete the bilirubin as quickly as it is formed.

Obstructive Jaundice

Obstructive jaundice of the extrahepatic type may be caused by occlusion of the bile duct by a gallstone, an inflammatory process, a tumor, or pressure from an enlarged organ.

Patients with jaundice may be lack of appetite, nausea, malaise, fatigue, weakness, and possible weight loss, jaundice may not be obvious. headache, chills, and fever if the cause is infectious.

Portal Hypertension

Obstructed blood flow through the damaged liver results in increased pressure throughout the portal venous system (portal hypertension). Portal hypertension is commonly associated with hepatic cirrhosis, but it can also occur with noncirrhotic liver disease. Although splenomegaly (enlarged spleen) with possible hypersplenism is a common manifestation of portal hypertension, the two major consequences of portal hypertension are ascites and varices.

Hepatitis

Hepatitis is a viral infection that produces inflammation of the liver and can lead to destruction of liver cells. The six major types of hepatitis are known as hepatitis A, B, C, D, E, and G. Hepatitis A and E are similar in transmission: They have a fecal-oral route, but are not chronic. Hepatitis B, C, D, and G have similar characteristics in that they are transmitted by the same routes: parenteral, perinatal, or sexual.
Hepatitis is an inflammation of the liver cells. This is most commonly due to a viral cause which may be either an acute illness or become chronic. The disease may also be due to exposure to drugs or toxins. 

Hepatitis A is transmitted via an oral route, often due to contaminated water or poor sanitation when traveling; it is also transmitted in daycare settings and residential institutions. It can be prevented by vaccine. 

Hepatitis B is transmitted via a percutaneous route, often due to sexual contact, IV drug use, mother-to-neonate transmission or possibly blood transfusion. It can be prevented by vaccine. 

Hepatitis C is transmitted via a percutaneous route, often due to IV drug use or, less commonly, sexual contact. There is currently no vaccine available. 

Hepatitis D is transmitted via a percutaneous route and needs hepatitis B to spread cell to cell. There is no vaccine available for hepatitis D. 

Hepatitis E is transmitted via an oral route and is associated with water contamination. There is no known chronic state of hepatitis E and no current vaccine available. 

Hepatitis G is transmitted via a percutaneous route and is associated with chronic infection but not significant liver disease. Exposure to medications (even at therapeutic doses), drugs, or chemicals can also cause hepatitis. Onset is usually within the first couple of days of use, and may be within the first couple of doses.

Hepatotoxic substances include acetaminophen, carbon tetrachloride, benzenes, and valproic acid.

Signs and Symptoms ( preicteric, icteric, posticteric )

- **Acute hepatitis:**
  - Malaise
  - Nausea and vomiting
  - Diarrhea or constipation
  - Low-grade fever
  - Dark urine due to change in liver function
  - Jaundice due to liver compromise
  - Tenderness in right upper quadrant of abdomen
  - Hepatomegaly
  - Arthritis, glomerulonephritis, polyarteritis nodosa in hepatitis B
Chronic hepatitis:

- Asymptomatic with elevated liver enzymes
- Symptoms as acute hepatitis
- Cirrhosis due to altered liver function
- Ascites due to decrease in liver function, increased portal hypertension
- Bleeding from esophageal varices
- Encephalopathy due to diminished liver function
- Bleeding due to clotting disorders
- Enlargement of spleen

Treatment

- Avoid medications metabolized in the liver.
- Avoid alcohol.
- Remove or discontinue causative agent if drug-induced or toxic hepatitis.
- Intravenous hydration if vomiting during acute hepatitis.
- Activity as tolerated.
- High-calorie diet; breakfast is usually the best tolerated meal.
- Administer interferon or lamivudine for chronic hepatitis B.
- Administer interferon and ribavirin for hepatitis C.
- Administer prednisone in autoimmune hepatitis.
- Liver transplantation.

Nursing Intervention

- Monitor vital signs.
- Assess abdomen for bowel sounds, tenderness, ascites.
- Plan appropriate rest for patient in acute phase.
- Monitor intake and output.
- Assess mental status for changes due to encephalopathy.
- Assist patient to:
  - Plan palatable meals; remember that breakfast is generally the best tolerated meal
  - Avoid smoking areas—intolerance to smoking.
**Cholecystitis**

Acute inflammation (cholecystitis) of the gallbladder.

**Etiology**

1. Often accompanied by the formation of gallstones (cholelithiasis), is cholecystitis. The inflammation may be either acute or chronic in nature.
2. From cause problems the normal filling and emptying of the gallbladder.
3. A stone may block the cystic duct which will result in bile becoming trapped within the gallbladder due to inflammation around the stone within the duct. Blood flow to the inflamed area will be minimized, localized edema develops, the gallbladder distends due to retained bile, and ischemic changes will occur within the wall of the gallbladder.
4. There is increased risk for gallbladder inflammation and development of gallstones with increasing age, being female or overweight, having a family history of gallbladder disease, people on rapid weight loss diets, and during pregnancy.

**Signs and Symptoms**

- Upper abdominal, epigastric, or right upper quadrant abdominal pain which may radiate to right shoulder
- Right upper quadrant (RUQ) pain increases with palpation of right upper abdomen during inspiration (Murphy’s sign) causing the patient to stop taking deep breaths
- Nausea and vomiting, especially following fatty foods
- Loss of appetite
- Fever
- Increased air in intestinal tract (eructation, flatulence)
- Pruritis (itching) of skin due to build-up of bile salts
- Clay-colored stools due to lack of urobilinogen in gut (normally converted from bilirubin which was blocked with bile flow)
- Jaundice—yellowish skin and mucous membrane discoloration
- Icterus—yellowish discoloration of sclera (white of eye)
- Dark, foamy urine as kidneys attempt to clear out bilirubin
Interpreting Test Result

- Ultrasound of gallbladder shows cholelithiasis, inflammation.
- HIDA scan (hepatic iminodiacetic acid) may be more sensitive than ultrasound in showing obstructed duct.
- CT scan shows inflammation or cholelithiasis.
- MRCP (magnetic resonance cholangiopancreatography).
- ERCP (endoscopic retrograde cholangiopancreatography).
- Bilirubin direct (conjugated) and indirect (unconjugated) will be elevated if there is obstruction.
- White blood cell (WBC) count elevation with inflammation.
- Alkaline phosphatase, aspartate aminotransferase (AST), and lactate dehydrogenase (LDH) will be elevated with abnormal liver function.

Treatment

- Low-fat diet.
- Intravenous fluid replacement for vomiting.
- Administer antiemetics for control of nausea and vomiting:
  - prochlorperazine
  - trimethobenzamide
- Replace fat-soluble vitamins (A, D, E, K) as needed.
- Administer analgesics for adequate pain control:
  - meperidine
- avoid morphine (may cause spasm of sphincter of Oddi, increasing pain).
- Administer antibiotics for acute symptoms.
- Placement of stent into gallbladder if the patient is not a candidate for surgery.
- Ultrasound-guided aspiration of gallbladder.
- Surgical removal of gallbladder:
  - Laparoscopic cholecystectomy
  - Open cholecystectomy

Nursing Intervention

- bed rest
- Monitor vital signs for changes in temperature, pulse rate, respiratory rate, and blood pressure.
- giving antibiotics and as ordered by the physician
- giving fluids, especially containing starch or glucose and oral
• Give a drug against analgesic
• Assess abdomen for bowel sounds, distention, and tenderness.
• Assess pain level for adequate pain control.
• Assess postoperative wound for drainage, signs of infection.
• Monitor T-tube drainage in postoperative open cholecystectomy patients; empty and record at least every 8 hours.
• Advance diet to low-fat diet postoperatively as tolerated.

Medical complications

1. Pancreatitis
2. A plastic anemia
3. Glomerulonephritis
4. Vacuities

Notice :- Possible surgical interventions (none)

Cholelithiasis

Calculi, or gallstones, usually form in the gallbladder from the solid constituents of bile; they vary greatly in size, shape, and composition. They are uncommon in children and young adults but become increasingly prevalent after 40 years of age, especially in women. The incidence of Cholelithiasis increases after the age of 40 years, affecting 30% to 40% of the population by the age of 80 years.

Risk Factors for Cholelithiasis

• Obesity
• Women, especially those who have had multiple pregnancies
• Frequent changes in weight
• Rapid weight loss (leads to rapid development of gallstones and high risk of symptomatic disease)
• Treatment with high-dose estrogen (ie, in prostate cancer)
• Low-dose estrogen therapy—a small increase in the risk of gallstones
• Cystic fibrosis
• Diabetes mellitus
Signs & symptoms

There are two types of symptoms:

A. Due to disease of the gall bladder itself:
   - Epigastric distress
   - Abdominal distention
   - Vague pain due to a meal of fried or fatty foods in the right upper abdomen.

B. Due to abstraction of the bile passages:
   - Fever
   - Palpable abdominal mass.
   - Nausea & vomiting.
   - Colic, pain radiates to the back or right shoulder.
   - Exhibition in the absorption of vitamins A/D/E/K.
   - If abstraction continues, abscess, necrosis, perforation with generalized peritonitis management.

Nursing Management

Pre-Operative care:

1. x-Ray of the gall-bladder, also chest x-Ray, electrocardiogram ECG, Liver function tests may done.
2. Administrator vit-k if the prothombin is low.
3. Provide I.V fluids ((Glucose + protein))
5. Preparation of any abdominal (Laparotomy).

Post-Operative care:

1. I.V fluid and water is given in about 24 hours, and soft diet given after bowed sound returns.
2. Low fowler’s position.
3. Nasogastric (NG) suction.
4. Analgesic: encourage the patient to turn cough and breath.
5. Observe, drainage, and change the dressing.
6. Using zinc oxide, aluminum to prevent the bile from digesting the skin.
7. Check & report the bile and collect it every 24 hours.
8. Remove the tube (7 - 14) days.
10. Careful record of fluid intake and output each "24" hours.
11. Low fat diet, high carbohydrate protein.

Pancreatitis

Pancreatitis is an inflammation of the pancreas which causes destructive cellular changes. It may be an acute or a chronic process. Acute Pancreatitis involves auto digestion of the pancreas by pancreatic enzymes and development of fibrosis. Blood glucose control may be affected by the changes to the pancreas. Chronic Pancreatitis results from recurrent episodes of exacerbation, leading to fibrosis and a decrease in pancreatic function. Presence of gallstones blocking a pancreatic duct, chronic use of alcohol, post-abdominal trauma or surgery, or elevated cholesterol are associated with an increased risk of Pancreatitis.

Signs and Symptoms

- Epigastric pain due to inflammation and stretching of pancreatic duct
- Boring abdominal pain may radiate to back or left shoulder in acute pancreatitis
- Gnawing continuous abdominal pain with acute exacerbations in chronic pancreatitis
- Patient in knee-chest position for comfort—reduces tension on abdomen
- Nausea and vomiting
- Bluish-gray discoloration of periumbilical area and abdomen (Cullen’s sign)
- Bluish-gray discoloration of flank areas (Turner’s sign)
- Ascites
- Weight loss
- Blood glucose elevation
- Fatigue

Interpreting Test Result

- Elevated serum amylase.
• Elevated serum lipase.
• Elevated white blood cell count (WBC) due to inflammation.
• Elevated cholesterol.
• Elevated glucose due to labile effect on glucose control.
• Elevated bilirubin.
• CT scan shows inflammation.
• Chest x-ray may show pleural effusion.

Treatment

• Intravenous fluids for hydration.
• Total parenteral nutrition.
• Administer vitamin supplementation.
• Pain management with narcotics during acute stage.
• Avoid morphine that may increase pain due to spasm of the sphincter at the opening to the small intestine from the common bile duct.
• Intravenous, patient-controlled analgesia or transdermal delivery preferable to intramuscular.

❖ Acute :

• NG tube connected to suction if vomiting.
• Surgical intervention for abscess or pseudocyst.

❖ Chronic :

• Blood glucose control with insulin.
• Administer pancreatic enzymes with meals.
• Surgical intervention for pain control, abscess.

Nursing Intervention

• Assess vital signs for elevated temperature, elevated pulse, and changes in blood pressure.
• Assess pain level.
• Monitor intake and output.
• Assess abdomen for bowel sounds, tenderness, masses, ascites.
• Monitor finger stick blood glucose.
• Assess lung sounds for bilateral equality.
• Frequent oral care for patients.
• Teach patient about home care:
• Avoid alcohol and caffeine.
• Bland, low-fat, high-protein, high-calorie, small, frequent meals.
• Use of blood glucose meter.
• Medication management, schedule, side effects.
• Plan rest periods until strength returns.
Thyroid & parathyroid glands

Thyroid glands

Are endocrine located in the front section of the neck and on both sides of the trachea and larynx consists of Right lobe and another left and supply by artery thyroid Supreme, which is a branch of the carotid artery and the lower artery thyroid, which is a branch of the cervical artery pour hormones in the blood, which affect the Chemical reactions in the body and thyroid glands secrete thairoxin and Tatra Ayudotheionin hormones which containing iodine-hormone that affect the process of growth and development also affect the functions of the nervous system.

Thyroid disease: goiter

is an enlargement of the thyroid gland and be temporarily seen in the Puberty of the female and menstrual period and sometimes be permanent enlargement due to a lack of iodine in drinking water.
Signs and symptoms:

- Enlarged thyroid gland size
- Feeling by Bloated in the throat area
- Enlarged may cause difficulty breathing and difficulty swallowing due to pressure on the trachea

Treatment and nursing care:

- Psychological support
- Give iodine in the form of drops
- In severe cases require surgical treatment

**Toxic Goiter or Thyrotoxicosis**

Goiter is due to increased secretion of thairoxin hormone where gland swells in all sides and appear prominent in the neck from the front or from behind and surrounded trachea which causing pressure on the trachea and shortness of breath.

causes:

- Genetic causes
- Arthritis
- Tonsillitis
- Physical effort and psychological emotions
- Fear and emotional trauma
- Typhoid
- Increase stimulating hormone secretion of the thyroid gland.
Signs and symptoms:

- Discomfort and stability
- Feeling tired and irritability
- Increased pulse
- Sunken eyes
- Increased appetite
- Increased sweating, irregular menstrual
- An increase in the weight and decrease
- Difficulty swallowing
- Difficulty breathing
- Irregular heartbeat Pulse and speed
- Warming hands with sweating
- A mild muscle jerk in your hands
- Increased blood pressure
- Diarrhea and vomiting sometimes
- Excess sugar in the urine, sometimes

Diagnostic and laboratory tests:

- Examine the representation of food (B.M.R)
- Thyroid scanning
- work E.C.G.

Treatment:

- Drug therapy to stop the analysis of the secretion of thyroid hormones and given anti-thyroid treatment and to reduce the activity of the thyroid
- Radioactive iodine treatment is given in a specific age is not given to pregnant women, after childbirth, or in the role of breastfeeding
- Surgical treatment

Nursing care by before the operation:

- Emotional support to the patient
- Work necessary tests
- Measurement of vital signs
- Give anti-thairoxin treatment
- Give food rich in vitamins and proteins
- Weighing the patient daily
- Cleaning the digestive system
- Patient physically cleaner with shaving area
- Taking agree to make the operation
- Given medication before the operation, such as buthadin and atropine
- Sends the patient to the operations with all diagnostic tests

Nursing care after the operation:

- Must prepare all the necessary instruments to avoid complications that occur to the patient after the operation

1 - tools to Trachostomy  
2 - prepare oxygen  
3 - intravenous fluids
- The patient lies on his back then lifted a little bed with a pillow behind the patient  
- Do not move his head until wound healing  
- Measurement of vital signs and recorder  
- Monitor the patient's voice  
- Monitor the patient's breathing  
- Note dressing  
- Encourage the patient to breathe, cough  
- Work neck massage  
- Giving intravenous nutrition  
- Encourage the patient to move in bed  
- Review physician to limited the level of iodine in the thyroid

Hypothyrodism

Due to lack secretion of thairoxin hormone which leads to lack of metabolism may be primary result from removal by surgical or be secondary because of weakness in the secretion of thyroid stimulating hormone (T.S.H) of thyroid or chronic inflammation occurs the thyroid gland.
Signs and symptoms:

- General weakness
- Dry the patient's skin
- Headaches
- Appearance stupid and difficult of speech sometimes
- Hair fall and break fingernail
- Pallor of the patient's body
- Not sweating
- Overweight
- Constipation
- Dyspnea
- Swelling of the face
- Cardiac hypertrophy with atherosclerosis in some cases
- Slow pulse
- High blood pressure is sometimes
- Anemia
- Pain of angina
- Menstrual disorder in women

Diagnostic tests:

- Radioiodine scan
- B.M.R. examination may be slow
- Radiography of the heart
- Check your blood cholesterol and an increase in most cases

Treatment:

- Giving thyroid extract by 15 mg / day may increase quantity
- Give thairoxin (1/3 to 3/10)
- Treating a patient with angina or injured heart failure and giving medicines

Nursing care:

- Give full comfort to the patient
- Heating patient
- Note bowel movement
- Measuring and recording vital signs
• Note shortness of breath
• Work massage to back to prevent bedsores clinical
• Food patient content on protein and vegetables.

**Parathyroid**

Is a four small glands located side thyroid gland in the neck 2 toward the top and 2 is down on either side of the median line and secrete a hormone called Barathormone to the organization and representation of phosphorus and calcium in the body (in the blood and bone)

![Parathyroid Glands](image)

**HYPER PARATHYRODISM**

Increased secretion of the hormone leads to trouble in the level of phosphorus and calcium in the blood may increase the deposition of calcium in the bones and increase in the blood to 12 mg every 10 cm³ of blood and decreases phosphorus and the both increased in urine also gets a lack of calcium in the bones due to leak calcium in the bones into the blood, lead to decreases the phosphorus calcium in the bones and sometimes increased calcium in the blood and lead to deposition in the kidneys and result the Nephro calcinosis.
Signs and symptoms:

- Bone and muscle pain
- Fracture in the long bones
- Curve the back
- Very thirsty
- Hematuria
- Renal colic sometimes
- Uremia
- Loss of appetite

Diagnostic tests:

- Radiography of the bones
- Examination of calcium and phosphorus in the blood
- Examination of calcium and phosphorus in the urine

Surgical treatment
removal of the tumor or cut part of the Parathyroid gland

Nursing care:

- Routine procedures postoperative giving the amount of calcium 10 %, especially in the early days of the operation and you prevent from injury by tetany and is given by intravenous nutritious.

HYPO PARATHYROIDISM

causes:

- Error in removal during the operation to removal the thyroid glands.
- Atrophy the glands and lack of secretion efficiency.
- Sometimes given large amounts of radioactive iodine in the treat of thyroid gland, which reduces the efficiency and reduces excreted hormone which causes lack of calcium and increasing the phosphorus with reduces in the urine.
Signs and symptoms:

- General muscle spasms
- Tetany
- Dyspnea
- Increased phosphorus in the blood
- Lack of calcium in the blood 7 mg in 100 cm³ from blood

Treatment and nursing care:

- Give calcium chloride
- Increase giving milk and products
- Giving vitamin D to increased the calcium in the blood
- Treat the condition Tetany
- Monitoring & recorded of vital signs
- Patient monitoring in case of vomiting and loss of consciousness
- Monitor the patient when giving intravenous calcium.

***Diabetes mellitus***

Is an imbalance in the representation of carbohydrates due to a lack of secretion of insulin of the pancreas which leads to increased blood sugar and also appears in the urine as well as show the ketones bodies in the blood and urine, where all body cells affected by the derangement in metabolism.
causes:

- Genetic reasons or family illness
- Obese
- Psychological and physical effort
- Lack of insulin or loss
- Pneumonia or influenza.

Types:

1- Juvenile type

Acute, especially at poor or weak which under the adult and lead to death if delayed the treatment by insulin

2- Adult type

Excessive in adults in obesity and discovers by accident when checking urine

Nursing assessment of symptoms:

Main symptoms:

- Increased amount the urine at patient (3000 cm³) and the color of your urine pale and thick and high gravity
- Thirsty and drink water frequently
- The patient loses weight and becomes poor
- Increased eating
- Smell of acetone in his mouth and there glucose in the urine
- Itch skin

Other symptoms resulting from complications of the disease:

- Pollution and Skin Irritation
- Complications in the eye Diabetic Retinopathy
- Tuberculosis (T.B)
- Al-athiroma (Gangrene)
- Renal disease (Renal Failure)
Diabetic coma (result in hypo & hyper glycogen)

Diagnostic assessment:

- Examination of sugar in the urine (Test tape)
- Check your blood sugar FBS & RBS
- Check your blood urea
- Check your blood cholesterol increases rate
- ECG
- Chest x-ray

Treatment:

- Diet control (diet therapy)
- Insulin Treatment (Insulin therapy – soluble / Weak action / Intermediate action)
- Oral Hypoglycaemic Drug
- Giving Vit-B and Iron

Complications of diabetes:

- Complications in the eye (Diabetic Retinopathy)
- Atherosclerosis
- Ketoacidosis in the urine
- Hypo & hyper glycaemia in the blood
- Dermatitis (Skin irritation)
- Vascular and Renal complications
- Affects the gastrointestinal (diarrhea - constipation)
- Neurological illness (Neuropathy)

Nursing care of diabetes:

by follow-up to:

- Food (diet)
 Symptoms:

- Analysis of urine
- Emotional support
- Giving the Insulin
- Giving instructions and basic rules in providing care for himself taking into account the private hygiene and foot to prevent Gangrene.

Disease of Bones and Joints

Fracture

Is a sudden break in the bone tissue and the fracture occurred as a result of the impact of the power, directly or indirectly on the bone. And gets the break in the rare cases of sudden violent contraction muscle during servitude.

There are several local or general factors help to fracture, including:

A. General factors:

1 – Age
2 – Occupation
3 – Nervous Disease-causing paralysis in muscles

B. Topical factors:

(As a result of injury bone disease): Pathological fracture
1- Erosion of bone
2- Muscular Dystrophy topical as detailed in tuberculosis (TB Arthritis)
3- Acute Osteomyelitis
4- Carcinoma of Bones.
5- Lack of calcium in the body

Types of fractures:

Fractures are classified into:
1- Simple fracture simple fracture and take multiple forms:
   - Oblique fracture
   - Transverse fracture
   - Spiral fracture
2- Compound fracture (Open fracture)
3- Complicated fracture
4- Comminuted fracture
5- Green Stick fracture
6- Impacted fracture
7- Depressed fracture
8- Compressed fracture
9- Unstable fracture

Signs and symptoms:

1- Severe pain
2- Deformation
3- Loss of function
4- Edema
5- Hear the Crepitus in fracture at movement
6- Spasm or Cramping

Fracture complications:

A - General Complications

1 - Neurogenic of Primary Shock
2 - Clotting
3 - Loss of function
4 - Fat Embolism
5 - urinary tract stones
6 - Hypostatic Pneumonia

B - Local Complications

1- Malunion ( wrong Healing )
2- Delayed union and Non union
3- 2a - installed is not correctly
4- 2b - infection
5- 2c - A poor Blood supply of the fracture site
6- 2d - Chronic systemic diseases
7- Limitation of Joint Movement and joint stiffness
8- Inflammation

Treatment of fracture ( First Aid )

1- Installation by splints
2 - Installation by Traction
3 - Operative Treatment
4- Stop the bleeding
9- Plaster of Paris
10- Giving Analgesic
Nursing care & Nursing Management:

1. Monitor and measure Vital Signs
2. Attention to clean the wound and keep it from inflammation
3. Note fracture zone after linked by splints or Plaster of Paris
4. Attention to cleanliness of the patient's body and change his position in bed to prevent Bed Sore
5. Attention to the patient's diet and be High vitamins and calcium
6. Encourage the patient to do some exercise and especially muscle surrounding fracture
7. Giving medications
8. Emotional support and provide psychological comfort for the patient

Nursing care of the patient who handles put the Splint:

After modifying the broken bone and traced the fracture fixation entertained with not to make way for the movement and a sufficient period until healing is conducted in a way that external fixation using rolls of plaster splints for the purpose of external fixation. The role of the nurse is:

1. Raising parties Lifting of Limbs
2. Monitor the patient for signs on splints end
3. Touching the fingers at the end of the splint
4. Smell the splint
5. Change the status of the patient in the bed to prevent complications
6. Exercises to surrounding muscle of fracture
7. Analgesic use ointments in case of itching
8. Instruct the patient to prevent the introduction of something strange in the splint with prevent moistened
9. Physical hygiene while encouraging the patient to carry out daily activities
10. Good nutrition, rich in calcium and proteins
11. In the case Removal of cast raises doctor splint bales conclusive after lifting works massages and muscle
exercise to re-activate blood circulation and movement
12. Psychological support

Acute Osteomyelitis

Defined
Is an infection in the bone in one of the organisms as Streptococcus and Staphylococcus or pulmonary and bone up to by blood.

Signs and symptoms:

1. Severe pain
2. High temperature (Fever)
3. Loss of appetite and general weakness
4. Swelling of Joints
5. High temperature region and redness

Diagnostic tests:

1- Blood test for ... ESR
2- Blood Culture
3- X-ray of Bone

Complications

1 - septicemia or purulent.
2 - Infection in near joint
3 - Ephephysial cartilage injury connecting to the bone, leading to stop growth
4 - Turning Acute inflammation to Chronic Osteomyelitis.

Treatment:

1- Comfort bedding.
2 - Giving antibiotics.
3 - Use hot compresses.
4 - use heat-reducing drugs.
5 - surgery (which make holes in the bone for the exit of pus from it and remove tension in the bone).
Nursing Care:

1- Comfort of the patient.
2- Patient hygiene.
3- Monitoring vital signs and recorded with the changing status of the patient.
4- Attention to the patient's diet rich in protein and calories and taking fluids frequently
5- Attention to the wound area and follow the road in the process of sterile dressing.
6- Giving sedatives and analgesics for pain.
7- Monitor side effects, such as swelling, redness, pain area.

**Chronic Osteomyelitis**

Occurs as a result of severe bone infection and caused injury by Streptococcus and Staphylococcus or pulmonary and so on.

Treatment:

1- Complete bed rest.
2- Use antibiotics.
3- If you configure the abscess must discharge pus accumulated and may require surgery in the region from bone (Sequestrum).

**Arthritis**

Infection in the joints, and dived the causes to tow types:

- Result by infection
- Degenerative Lesion

Types of Arthritis:

1- Rheumatoid Arthritis
2- Osteo Arthritis
3- Pyogenic Arthritis
4- Tuberculosis Arthritis
5- Gouty Arthritis
Gouty Arthritis: is occurred result defect in purin substance which lead to Increase in uric acid in the blood.

Amputation

Definition:
A surgical procedure to cut the party to be treated.

causes:

1. Elephantiasis (condition in which parts of the body swell and the skin becomes hardened, frequently caused by infestation with various species of the parasitic worm *Filaria* )
2. Tumours of Bone
3. Gangrene
4. Infection

Complications:

1- Haemorrhage
2- Infection and Gangrene (Gas gangrene )
3- Bone Necrosis
4- Deformity and contractures
5- Painfull neuroma

Pre Operative Nursing Management:

1- Clarify the situation of the patient and his family about the reasons for amputation with some of the obstacles that appear on the patient.
2- Emotional support and give psychological comfort and reduce fear and anxiety
3- Prepare the patient for surgery

Post Operative Nursing Management:

1- Patient monitoring and recording vital signs
2- Control bleeding, dressing Note
3- Monitor intravenous fluids (I.V. Infusion )
4- Control drainage tube with Note complications
5- Placed a splint to prevent cramps or spasm knee must be observed
6- Note the sensitivity of the skin and skin color and edema in the region
7- Give medications (Analgesic)
8- Change the status of the patient in bed to stimulate blood circulation
9- Work of exercise and physical therapy for the region
10- Put & Develop artificial limbs as possible.

*urinary tract disease*

The urinary tract consists of following organs:
1 - Kidneys (Capsule of kidney- Renal Cortex / and internal -Renal Medulla & Renal pelvis)
2 – Ureters
3 – Bladder
4 – Urethra

Functions of the Kidney

- Urine formation
- Excretion of waste products
- Regulation of electrolytes
- Regulation of acid–base balance
- Control of water balance
- Control of blood pressure
- Renal clearance
- Regulation of red blood cell production
- Synthesis of vitamin D to active form
- Secretion of prostaglandins
- Regulates calcium and phosphorus balance
- Activates growth hormone
Ureters:
The urine formed in the nephrons flows into the renal pelvis and then into the Ureters, which are long fibro muscular tubes that connect each kidney to the bladder. These narrow tubes, each 24 to 30 cm long, originate at the lower portion of the renal pelvis and terminate in the trigone of the bladder wall.
The left ureter is slightly shorter than the right ureter. The lining of the ureters is made up of transitional cell epithelium called urothelium. The urothelium prevents reabsorption of urine. The movement of urine from each renal pelvis through the ureter into the bladder is facilitated by peristaltic contraction of the smooth muscles in the ureter wall.

Bladder:
The urinary bladder is a muscular, hollow sac located just behind the pubic bone. The capacity of the adult bladder is about 300 to 500 mL. The bladder is characterized by its central, hollow area, called the vesicle, which has two inlets (the ureters) and one outlet (the urethra). The area surrounding the bladder neck is called the urethrovvesical junction.

Urethra:
The urethra arises from the base of the bladder: In the male, it passes through the penis; in the female, it opens just anterior to the vagina. In the male, the prostate gland, which lies just below the bladder neck, surrounds the urethra posteriorly and laterally.

Diagnostic tests and laboratory examination:
1- Urinalysis and Urine Culture: Urine examination includes the following:
   - Urine color
   - Urine clarity and odor
   - Urine pH and specific gravity
   - Tests to detect protein, glucose, and ketone bodies in the urine (proteinuria, glycosuria, and ketonuria, respectively)
   - Microscopic examination of the urine sediment after centrifugation to detect RBCs (hematuria), white blood cells, casts (cylindruria), crystals (crystalluria), pus (pyuria), and bacteria (bacteriuria)

2- Blood examination
3- Cystoscopy
4- Cyystogram
5- Retrograde
6- Ultrasonography
7- Intravenous Urography, intravenous pyelography (I.V.P)
8- X-ray films and other imaging modalities Kidney, Ureter, and Bladder Studies An x-ray study of the abdomen or kidney, ureters, and bladder (KUB)
9- Computed tomography (CT) scans
10- magnetic resonance imaging (MRI)
11- Renal arteriogram
12- Renal biopsy
13- Phenol sulfonphthalein.

Signs and symptoms:

1- Pain
2- Hematuria
3- Urine retention
4- Frequency
5- Dysuria
6- A burning during urination
7- Nocturia.

Nursing care:

1- Notes (any abnormal signs, cyanosis)
2- Registration liquids
3- Note patient comfort and patient discomfort reasons:
   - Itching
   - dryness mouth
   - pain
   - bad odor (undesirable)
   - long lie in bed

Nursing care before urological operations:

1- prevent giving anything by mouth at 12 at night
2- Measuring and recording vital signs
3- Clean the patient's skin
4- Shaving the area of operation
5- Comfort and psychological support for the patient
6- Calm the patient
7- Pre-operative medications such as atropine.
Nursing care patients urinary tract after the operation:

1- Monitor the status of the patient
2- Giving intravenous fluids
3- Monitor dressing and Note bleeding
4- Control bleeding in a discharge tube installed in wound
5- Giving analgesic at pain
6- Encourage the patient to cough and take a deep breath
7- Move the patient every two hours to prevent ulcers
8- An exercise of the Lower limbs to prevent the complications of venous thrombus
9- Help the patient to walk
10- Measure the amount of urine output, color, and quantity with recording observations
11- Observation the tube of bladder foley catheter and change from time to other.

**Urinary Calculi ( Urinary stones )**

Predisposing Factors:

1. Increased uric acid
2. Increased secretion of calcium for people with excessive Hyper parathyrodism
3. Increase water loss by sweating
4. A person has a genetic predisposition
5. Calcium is deposited when be maturation acidic and occur in cases of urinary tract infection
6. Injury by tetany for a long time
7. Deficiency of Vitamin A
8. The lack of movement
9. The presence of a foreign body may form the nucleus to form stone.
Types of stones:

Urinary stones are polycrystalline aggregates consisting of varying amounts of crystal and organic matrix components. Although urolithiasis is inclusive of renal, ureteral, and bladder stones, the following discussion will pertain only to symptomatic renal and ureteral stones, as they are the most common. The most common urinary stone types are: calcium oxalate, calcium phosphate, uric acid, struvite (magnesium ammonium phosphate), and cystine.

SIGNS AND SYMPTOMS

• Hematuria
• Unilateral spasms of pain in the flank area (renal colic)
• Pain may radiate to lower abdomen, groin, scrotum or labia
• Nausea, vomiting, and sweating associated with occurrence of pain
• Elevated blood pressure with pain
• Extreme flank pain that comes slowly or quickly

Diagnosis:

• Urinalysis shows red blood cells.
• Ultrasound shows stones.
• X-ray of kidneys, ureters, and bladder (KUB) shows stones.
• CT scan shows stones.
• MRI shows stones.

TREATMENT

• Provide pain relief:
  • narcotics such as morphine
  • non-narcotics such as ketorolac, a nonsteroidal anti-inflammatory
  • Administer antispasmodics as adjuncts for pain control.
• Increase fluid intake to flush through the urinary tract.
• Lithotripsy—shock waves are used to break the stone into very small pieces that can pass more easily.
• Stent placement to allow free flow of urine and passage of small stones or stone pieces.
• Surgical removal of stone (Pyelolithotomy),(Nephrolithotomy),(Ureterolithotomy).
Nursing care for urinary stone patients:

1. Encouraging the patient to take large amount of liquids
2. Avoid foods containing large amounts of calcium
3. urine examination every 3 to 4 months
4. Encourage the patient to work exercise such as walking
5. Giving antibiotics to treat inflammation
6. Check with your doctor when you see the signs of inflammation or a hematuria
7. Note urine from the bladder through the tube and measure the quantity and color while taking large amounts of water
8. Provide good food that contains vitamins such as fruit juice contains vitamin C

**Renal Colic**

Definition:
Is sharp and severe pain in the kidneys and occurs when passing or attempting to pass stone into the ureter and associated pain and shock and pallor with increasing pulse rate, the pain or cramps to Renal Colic or ureter Colic move to the inguinal region.

Nursing care:

- put the patient by comfortable position
- Encourage the patient to take a deep breath
- Giving analgesic
- Encourage the patient to shower with hot water to remove the pain, With reassure the patient.

**Nephritis**

Characterized this group of diseases (non infection) by damage the kidney and often spread infection among children and young and be on the three types:
1. Subacute Glomerulonephritis
2. Acute Glomerulonephritis
3. Chronic Glomerulonephritis
Acute Glomerulonephritis:

Happens after 1 to 3 weeks of infection of the tonsils, pharynx, or upper respiratory tract infection.

Signs and symptoms:

Nausea, Vomiting, Paleness, Edema, High blood pressure, Headaches, Epistaxis, General weakness, Hematuria, Increasing the size of the kidneys and become pale with inflammatory with damage and turns into fibrous tissue and then turned into a chronic nephritis, Swelling of the face, Loss of appetite, High temperature, Lack of maturation and then anuria, convulsion may develop to Uremia and Congestive heart failure.

Treatment and nursing care:

Be taken care of by the symptoms and complications that appear
1 - Nausea and vomiting: prevent blockage of the respiratory tract
2 – Edema: A measure of the patient's weight and fluid
3 – Hematuria: Note the color of urine
4 – Convulsions: barriers to bed and put tongue depressor in the patient's mouth and protect the patient from injury Wound
5 – Fever: Measuring vital signs (give antipyretic drug)
6 – Headache: blood pressure measurement and give Analgesic
7 - The treatment of inflammation: give antibiotics to treat the infection.

Chronic Glomerulonephritis:

Chronic infection affects the kidneys as a result of acute nephritis. This disease leads to damage of Nephron and the appearance of scar tissue and affect the work of Nephron and to defect the cortex, and lead to shrinking or constricting the kidney.

Signs and symptoms:

Edema in the body, Headaches, High blood pressure, Anemia, Shortness of breath, Dry skin and tongue, Bone pain, Bleeding such as Epistaxis, Urinate more times in the night, Heart failure
Examination:

- Blood test for urea and sodium and potassium
- G.U.E – General Urine Examination

Nursing care:

- Complete rest in bed
- Measurement of vital signs
- Give fluids, which depends on the amount of output fluid
- Good attention to food
- Give medications that reduce stress and headache medications
- Treatment of anemia, heart failure
- Patient hygiene
- Psychotherapy.

Renal failure

Renal failure may be acute or chronic due to damage to the kidneys.

Acute renal failure

Is an inability the kidneys to work normal function and occurred problem in balance fluid and electrolyte and disposing waste outer body.

Causes:

1. Loss of fluid and blood in large quantities leads to lower blood pressure
2 - eating chemicals toxic such as lead and mercury
3 - shock
4 – Enlargement of prostate
5 - Acute Glomerulonephritis

Signs and symptoms:

- High blood pressure
- Increased pulse rate and breathing
- Lack of urination could be up to less than 400 cm³ / day
- Uremia.

**Uremia**

Is a Complete failure in the kidneys.

Signs and symptoms:

- Anuria
- Hematuria & Melena
- Hyperkalemia (reduce the level of Ca & Na)
- Coma (Uremic frost)
- Pulmonary edema
- Anemia with Pruritis
- Tetany with Twitching with Convolution

Treatment and nursing care:

- Complete bed rest
- Measure the amount of intake and output fluid
- Blood transfusions to treatment of anemia
- Give calcium to treat tetany
- Follow food diet and reduce potassium and protein
- Giving antibiotics
- Give medications and ointments to reduce itching (Pruritis)
- Give medications for high blood pressure
- Psychological support to reduce anxiety
- Peritoneal dialysis
Chronic renal failure

Definition:
The kidney unable to perform its function and chronic infections in the kidney cause damage in the greater part from tissue or fabric of the kidney and high ratio of urea and potassium in the blood.

causes :

- Infection in renal pelvis (Pyelitis), Obstruction in the urinary tract, such as the presence of stones or cirrhosis, Diabetes mellitus, An enlarged prostate.

Renal dialysis

Definition:
Dialysis is used to remove fluid and uremic waste products from the body when the kidneys are unable to do so. It may also be used to treat patients with edema that does not respond to other treatment, hepatic coma, hyperkalemia, hypercalcemia, hypertension, and uremia. Methods of therapy include hemodialysis, and various forms of peritoneal dialysis. The need for dialysis may be acute or chronic. Acute dialysis is indicated when there is a high and rising level of serum potassium, fluid overload, or impending pulmonary edema, increasing acidosis, pericarditis, and severe confusion. It may also be used to remove certain medications or other toxins (poisoning or medication overdose) from the blood. Chronic or maintenance dialysis is indicated in chronic renal failure, known as end-stage renal disease (ESRD), in the following instances: the presence of uremic signs and symptoms affecting all body systems (nausea and vomiting, severe anorexia, increasing lethargy, mental confusion), hyperkalemia, fluid overload not responsive to diuretics and fluid restriction, and a general lack of well-being. An urgent indication for dialysis in patients with chronic renal failure is pericardial friction rub. Patients with no renal function can be maintained by dialysis for years. Although the costs of dialysis are usually reimbursable, limitations on the patient’s ability to work resulting from illness and dialysis usually impose a great financial burden on patients and families.
There are two ways to Dialysis

1 – Haemodialysis
2 - Peritoneal dialysis

Haemodialysis:

Hemodialysis is the most commonly used method of dialysis, It is used for patients who are acutely ill and require short-term dialysis (days to weeks) and for patients with end-stage renal disease (ESRD) who require long-term or permanent therapy. It is the process which remove waste products such as Urea, Creatinine and Potassium in the blood.

Principles of Hemodialysis

The objectives of hemodialysis are to extract toxic nitrogenous substances from the blood and to remove excess water. In hemodialysis, the blood, laden with toxins and nitrogenous wastes, is diverted from the patient to a machine, a dialyzer, in which the blood is cleansed and then returned to the patient.

Shunt types:

1. External arteriovenous Shunt (Haemorrhage, Clotting, Infection as complications)
2. Internal arteriovenous Shunt (Fistula)

Prepare the patient before Haemodialysis:

1. Explain to the patient the Haemodialysis
2. Taking consent from the patient and his family
3. Measurement of the patient's weight before the operation
4. Measurement of vital signs

Nursing care during Haemodialysis:

1. Monitor the patient for fear of bleeding
2. Give heparin in cannula related in the patient's blood
3. Avoid measuring blood pressure in the arm containing shunt
4. All the tools used sterilized to prevent bacterial contamination
5. Measuring body temperature as well as the temperature of the liquid 38 C
6. Taking a blood sample from the patient and sent to a laboratory for testing
7. Monitor Clip in intravenous tube
8. The status of the patient was lying on his back
9. Prevent patient's from eating the salt and reduce proteins
10. Patient monitoring and observation:
    1 – fever
    2 - low or high blood pressure
    3 - irregular heartbeat
    4 - lower the patient's temperature ( Hypothermia )
    5 - muscle spasm and Twitching
    6 - headaches with chest pain

Nursing care after Haemodialysis:

1 - Measurement of vital signs
2 - giving medications
3 - The diet, low protein and Prevent from eating the salt
4 – Hygiene of External arteriovenous shunt and note appears abnormal blood as ( I.M. )
5 - examines the patient's blood
6 - removal catheterization
7 - Uses sterile dressing to the wound
8 - measurement of the patient's weight and blood pressure
9 - recording the start and end time to Haemodialysis

Types of Haemodialysis solutions:

1 – Type ( A ) solution used for all the cases that need to Peritoneal dialysis only in those cases;
   a - a high potassium in the blood
   b - edema in the body

2 - Type ( B ) solution containing a high ratio of glucose ( 7 % ) and given to the patient who has edema in his body
3-Type (C) solution does not contain the potassium is given to the patient that the ratio of potassium in the blood is high.

**PERITONEAL DIALYSIS**

The goals of peritoneal dialysis are to remove toxic substances and metabolic wastes and to re-establish normal fluid and electrolyte balance. Peritoneal dialysis may be the treatment of choice for patients with renal failure who are unable or unwilling to undergo hemodialysis or renal transplantation. Patients who are susceptible to the rapid fluid, electrolyte, and metabolic changes that occur during hemodialysis experience fewer of these problems with the slower rate of peritoneal dialysis. Therefore, patients with diabetes or cardiovascular disease, many older patients, and those who may be at risk for adverse effects of systemic heparin are likely candidates for peritoneal dialysis. Additionally, severe hypertension, heart failure, and pulmonary edema not responsive to usual treatment regimens have been successfully treated with peritoneal dialysis.

The peritoneal dialysis is divided into:

A - Instillation period (insert 2 later from liquid to peritoneal cavity)
B - Equilibration period (still liquid 30 – 35 min in peritoneal cavity)
C- Drainage period (open tube to removal liquid from peritoneal cavity)

Nursing care during peritoneal dialysis:

- Measurement of vital signs
- Emptying the bladder before the operation
- Measurement of the patient's weight before you start
  And supine - position on the back
- Measuring fluid Intake and Output
- Give food containing calories
- Pressure on the peritoneal region by hands in the absence of fluid or change the status of the patient to facilitate drainage
- Give heparin, potassium and antibiotics
- Cleanliness mouth and teeth of the patient's
- Work back massage
- Measuring the pressure and pulse every hour to prevent shock
- The nurse must monitoring and observation

1 - difficulty breathing (Dyspnea)
2 – bleeding
3 – shock
4 - severe abdominal pain
5 - loss of protein

Complications :

1 - patient discomfort as a result of the presence of pain in his abdomen, and sometimes in the shoulders because the peritoneal dialysis need more time from Haemodialysis.
2 – peritonitis ( the infection because recurrence insert catheterization in peritoneal region )
3 - chest infection
4 - shock and hypotension
5 - happens pleural effusion
6 - bleeding in the abdominal wall
7 - happens imbalance in fluid balance and Epilepsy.

KIDNEY TRANSPLANTATION

Definition:
Kidney transplantation involves transplanting a kidney from a living donor or deceased donor to a recipient who has end-stage renal disease (ESRD). Kidney transplants from well-matched living donors who are related to the patient are slightly more successful than those from cadaver donors. The success rate increases if kidney transplantation from a living donor is performed before dialysis is initiated. The half-life of a renal graft is longer if from a living related donor than a deceased donor.

Kidney transfer natural process from the donor to the recipient who has a uremia or chronic renal failure.

Donor:
1 - one of the relatives of the patient
2 – a donor's body is dead

Features donor( patient's relatives) :
❖ The patient's relatives:
❖ You must be a normal kidney
- the donated free from disease, high blood pressure or any other infections
- Being donated laboratory tests following:
  - blood groups ABO
  - ECG
  - Chest x-ray
  - Blood test match
  - Cystoscopy
  - Check your blood urea
  - Endoscopic examination of the aorta

Features in the case of a donor's body is dead:

- Must be the cause of death is head injury
- Donors must be young
- treat by Ventilator
- Has no previous infections
- Has no malignant disease
- Both kidneys are working normally

Nursing care before the Kidney transplantation :

Follow the same nursing care for patients in any operation in the urinary tract

Nursing care after the Kidney transplantation :

Must control the symptoms and signs of rejection of the new kidney, a lack of urination, edema, fever, increased blood pressure, fear, weight gain, swelling and feel increased weight in the renal area.

the rejection of the new kidney after (24 – 72) hours or (3 – 14) days or (3) weeks and should be given anti-rejection directly and measuring fluid inflows and outflows and Follow the same nursing care for patients in any operation in the urinary system.
blood and lymph glands disease

Definition:

*Blood:* is a viscous liquid, red in color, the heart pump blood to be vascular system the amount of blood in the body approximately (7 – 10 %) of the weight and form about (5) liters and contains red blood cells, plasma and white blood cells and platelets (erythrocytes (red blood cells [RBCs], red cells), leukocytes (white blood cells [WBCs]), and thrombocytes (platelets)).

Blood functions:

- transfer of Oxygen and transfer of Co2
- Maintains the normal size of interstitial fluid
- Food absorbed
- Protect the body against wounds
- Transfer of waste products from the cells to the Excretion organs (kidney, lung, liver and skin)
- Distribution of chemicals substance and hormones in the body

Diagnostic tests:

1. complete blood count
2. Coagulation time
3. prothrombine time
4. Bleeding time
5. ESR
6. PCV Hematocrit
7. Blood gas analysis
8. Blood Chemistry
9. Blood group and cross matching
10. RH Factor

Anemia

Definition: is a medical condition caused by a decrease in the number of red blood cells or amount hemoglobin or may occur also from a lack of both.
Causes anemia:

A - lack of production of red blood cells due to;
1 - bleeding injury
2 - the inability of the bone marrow to produce red blood cells, such as anemia non formative Aplastic anemia or Leukemia
3- Lack of necessary materials for composition hemoglobin and red blood cells, such as iron, folic acid and vitamin B12
4- Other causes that lead to anemia is cancer

B - hemolysis of red blood cells due to;
1 – Incompatible Blood
2 – Toxin or infection such as malaria
3 – Hypersplenism
4 - congenital diseases, survived her red blood cells abnormal
5 - taking some drugs like Al-salafunoumaad or chemical exposure.

types of Anemia :

1. Iron deficiency Anemia

In certain periods the body needs to iron by a large amount in the period of rapid growth in childhood and adolescence and pregnancy where the body needs a larger amount of iron in food.

Signs and symptoms:
• Loss of appetite
• Pallor in the lip color, skin and naile
• Difficulty breathing in the case of effort or fatigue
• Rapid pulse and weakness
• Ulceration and inflammation of the tongue and mouth

Nursing care and treatment:
• Good nutrition food containing iron
• Reassure the patient and relieve anxiety and fear
• Treat the cause of anemia
• Giving drugs
• Give medications for by intramuscular like Imferon

2- Aplastic Anemia

Is the failure of the effectiveness of the bone marrow to produce red blood cells, white and platelet One of the most important reasons are:
1 - poisoning as a result of the taking certain drugs such as Al-streptumaysin and drugs that cause effectiveness of bone marrow or Hypoplasia and Anti-histamin
2 - genetic factors
3 - chronic infection
4 - presence of tumors in the body
5 - exposure to radiation for a long time

Signs and symptoms:

general weakness and shortness of breath ,Weakness of the body's resistance to infected ,Bleeding from the mucous membranes in the gums, nose, urinary and digestive system

Treatment and nursing care:

- Isolate the patient and protect from injury infection and bleeding and avoid suffering a wound
- Give the patient antibiotics to prevent infection
- Giving the patient food containing a high percentage of iron
- Blood transfusion
- Stop the drugs that cause effectiveness of bone marrow to produce red blood cells

3- Heamolytic Anemia

This type result of the imbalance between the damaged red blood cells and red blood cells resulting from any analysis of red blood cells in the blood vessels broken large quantities and be the life of the red blood cells, short and die more quickly than be in the natural state

causes:

A - a genetic deficiency in red blood cells or defect within red blood cells and hemoglobin disorders

1 - Thalassemia
2 - Sickle cell Anemia

B - Enzymes defects
1- ( Glucose 6 – phosphate dehydrogenase / G6PD )
2- Septicemia
3 - the transfer of a different blood type to the patient's another blood type
4 - Some chemicals substance
5 - happen in the event that the mother's blood type RH - and father RH +
6- Prosthetic heart valve

Diagnostic tests :

- Indirect Bilirubin
- Check Urobilinogen in urine and feces
- Prosthetic heart valve valves.

Treatment and nursing care :

1 - give blood in cases of acute and urgent
2 - Give iron compounds and vitamins
3 - surgery for splenectomy
4 - When there itch (Pruritis):
   Not use soap on his body and used Calamine lotion
5 - full physical comfort

4 - Pernicious Anemia

This types of severe anemia is characterized by low formation of red blood cells and loss of hydrochloric acid from abdominal secretions and intrinsic factor, which affects the absorption of Vitamin B - 12 of the intestines and is essential to the body's cells and natural growth of red blood cells.

causes :

atrophy of the stomach lining and the fact that the mucous membrane of the stomach is naturally affecting the stomach and it is unable to secrete intrinsic factor, which merge with food containing vitamin B12 and go with him to the ileum where absorbed there and in the absence of intrinsic factor lose blood ability to absorb this vitamin and used storage vitamin in the body until reduce and loss from the body and then begin show signs of anemia on the patient's.
Signs:
- Orthopnea
- Gradually feeling weak and tired
- Mild diarrhea
- Decrease in body weight has been shown and edema in the feet
- Presence of ulcers or burning in the mouth or redness of the tongue
- Neurological symptoms like Tingling, depression, numbness body

Diagnosis:
- Examine the blood and bone marrow forms abnormal red blood cells
- Examination of Gastric analysis and notes a shortage of the amount of hydrochloric acid
- Shilling test

Treatment and nursing care:
- Give the patient vitamin B-12 in the muscle daily
- Encouraging the patient to eat foods containing iron and vitamins
- Give iron compounds for oral or I.M. injection
- Provide psychological comfort

5 - Folic Acid Deficiency

Reasons:
- Occurs due to not eating or low amount eating this vitamin
- This situation appears when addicted to alcohol
- Pregnant women
- People with malabsorption syndrome
- When using medicines to treat cancer and contraceptives that are taken by mouth.

Clinical signs:

Megaloblastic Anemia

Ulceration of the tongue
Treatment:

giving folic acid 1 mg daily for 6 months in cases of pregnancy and given vitamin C

Nursing care for people with anemia in general:

1. Patient monitor and Note the color of the skin or any sign of bleeding
2. Status of the patient with appropriate and comfortable
3. Foods that contain essential nutrients
4. Monitor the patient when blood transfusion and adjust Quantity 40 drops / minute
5. Cleaner skin care and nail
6. Oral hygiene care and fat lips
7. Prevent the injury infection must wash hands and clean wear
8. Instruct the patient about medications or drugs used by such as iron.

Leukemia

The term leukocytosis ,Characterized by increasing the number of white blood cells is non completed and immature and the low number of red blood cells and platelets and increase the number of lymphocytes. The diseases affects on tissues that content the blood such as the spleen, lymphatic system and bone marrow so it is considered a disease NEOPLASTIC , the disease spread to organs of non-produce the blood like skin , digestive canal, kidney and meninges .
These abnormal white cells are present in the bloodstream.

- Accompany with anemia and bleeding problems.
- Increased risk of infection caused by white cell abnormalities.
- Occurs in children ages (2 to 8 years) and mostly at age 4. It affects boys more often than girls.
- Leukemia items by the several types of leukocytes (e.g., eosinophils, basophils, monocytes) and classified to three types according to types of tissue that infect by leukocytes (granulocytes, monocytes, lymphocytes).

**Cause**

- The exact cause of leukemia is unknown. There is a higher incidence in people who have been exposed to high levels of radiation or prolonged exposure to radiation, which causes damage to the bone marrow who have had exposure to benzene, who have a history of aggressive chemotherapy for a different type of cancer.
- Febrile virus infection
- Heredity factor

**Diagnosis:**

1. Complete blood count to measure the numbers of white cells, red cells, and platelets.
3. Bone marrow aspiration and biopsy, Lymph node biopsy to know the type of leukemia.

**Types of leukemia:**

1. Acute leukemia

   Have 3 types:

   1- lymphocytes (in children)
   2- granulocytes, (in all age)
   3- monocytes (rarely)
Signs and symptoms:

- Inflammation of the upper respiratory tract
- Pallor and general weakness and fatigue
- Hemorrhage from different areas of the body
- Infection, tonsillitis and pharyngitis
- Swelling and ulceration and death of tissue (Necrosis) in the tonsils, gums, jaws, cheeks.
- High fever, rash
- Enlarged lymph nodes in the neck
- Enlarged liver and spleen
- Feeling of vomiting and headache.

Treatment:

1. Giving antibiotics
2. Blood transfusion to the patient
3. Give medication in the form of intravenous injection such as Vincristine (الفينكرستين)
4. Registration toxic symptoms which appear on the patient as a result of the use of medicines such as fall the hair, constipation, muscular and nervous irritability, vomiting, short of breathing.

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The patients is health gradually worsen and appear the fatal or death symptoms appear within a period of 2 or 3 months after the initial signs of the disease.

Chronic leukemia (Chronic lymphatic leukemia)

(slowly developing). It is rare in children. Chronic disease occurs and continues for several years and the age of patients with the disease over the 50 years.

Causes

- the disease is known causes
- chromosomal changes may occur by radiation
Signs and symptoms:

- Enlarged lymph nodes in the neck, axillary and inguinal region
- Enlarged liver and spleen
- Anemia and pallor and emaciation, fatigue, shortness of breath and palpitations
- Bleeding from various parts of the body such as the skin (Petechia) and gums pneumonia and inflammation of the ear and sinus
- Increase the number of white blood cells 20000 - 200000 per cubic milliliter cubic ml³.

Treatment:

1. Giving antibiotics, vitamins and iron compounds
2. Give blood for the patient
3. Radiation cure
4. Give some medications, such as 6 Mercaptopurine, chlorambucil.

Signs and symptoms (general):

1. Fever.
2. Pallor with weakness and fatigue.
3. Anorexia, nausea and vomiting.
4. Loss of weight.
5. Dysapnea.
6. Cardiac enlargement.
7. Lymph node enlargement.
8. Spleen and liver enlargement.
10. Purpura and bleeding tendency from nose and minor wounds.
11. Necrotic lesion in the mouth, gum, stomach and intestine.

Treatment and nursing care:

1. Treatment is palliative and supportive.
2. Cytotoxic drug.
5. Antibiotics.
6. Psychological support during the treatment by radiation or the course of chemotherapy and also when there is side effect of treatment.
7. Rest in bed.
8. Prevent infection.

**Hemorrhagic disease:**

**Hemophilia**

- Hemophilia is a rare bleeding disorder that prevents the blood from clotting properly.
- Male usually affected more than girls.
- Girls are rarely affected by this hereditary condition but she is a carrier.
- Clotting factors help stop bleeding and allow a blood vessel to heal after an injury.
- This process needs clotting factors VIII and IX.
- People with hemophilia are deficient in one of those factors.

Classical Hemophilia (Hemophilia A):

- known as factor VIII deficiency.
- It is the cause of about 80% of cases.

Christmas disease (Hemophilia B):

- It makes 20% of cases.
- It is a deficiency of factor IX.

**Signs and Symptoms:** (depending on severity of the deficiency):

1. Prolonged bleeding from nose.
2. Excessive bleeding following a tooth extraction
3. Excessive bleeding following operation.
4. Hematuria.
Diagnosis:

1. Complete blood examination.
2. Prothrombine time.
3. Factor VIII and Factor IX level.

Treatment and nursing care:

1) Periodic infusions of the deficient clotting factor given by I.V.
2) Fresh blood and plasma for blood transfusion.
3) Prevention of trauma and injury.
4) Care for teeth and mouth.
5) Healthy diet (protein and vitamins).
6) Drugs given by oral route (not by injection).
7) Health education for family and teachers to prevent trauma.
Types and causes of anemia

ANEMIA

Blood loss
- Acute loss hemorrhage
  - Injury
    - From umbilicus
  - Ulcerative colitis

Chronic loss hemorrhage
- Congenital causes
  - Aplastic anemia
  - Hypoplastic anemia

Inadequate production
- Acquired causes
  - Iron deficiency anemia
  - Chronic disease
    - G6PD Deficiency

Increase destruction
- Congenital hemolytic anemia
- Acquired hemolytic anemia
  - Sickle cell anemia
  - Transfusion reaction
  - Rh Incompatibility
  - With burn

- Thalassemia
- Pernicious anemia
**Hodgkin's Disease**

Hodgkin's disease usually begins as a painless enlargement of one or more lymph nodes on one side of the neck (cervical nodes). The individual nodes are painless and firm but not hard. The most common sites for lymphadenopathy are the cervical, supraclavicular, and mediastinal nodes; involvement of the iliac or inguinal nodes or spleen is much less common, and axillary nodes. Hodgkin's disease is a relatively rare malignancy that has an impressive cure rate.

**Causes**

- the disease is known causes
- Reticulo endothelial system

**Diagnosis:**

1. Lymph node biopsy and found abnormal cells called (Reed-Sternberg cell).
2. Chest x-ray
3. Chest x-ray and CT scan of the chest, abdomen, and Pelvis
4. Laboratory tests include CBC, platelet count, ESR, A bone marrow biopsy

**Signs and Symptoms**

1. Painless enlargement of one or more lymph nodes the mass is large enough to compress the trachea and cause dyspnea
2. Pruritus is common
3. Severe pain after drinking alcohol
4. Fever.
5. Weakness and fatigue
6. Anorexia
7. Loss of weight.
8. Secondary infection
9. Anemia and the low number of platelets (Thrombocytopenia) which lead to the hemorrhage.
Treatment and nursing care:

- Chemotherapy
- Radiation therapy
- Blood transfusion
- Antibiotics
- Increased the Iron and vitamins in the diet
- Giving Cortisone to the patient

Cardiovascular system

The heart is a hollow, muscular organ located in the center of the thorax, where it occupies the space between the lungs (mediastinum) and rests on the diaphragm. It weighs approximately 300 g (10.6 oz); heart weight and size are influenced by age, gender, body weight, extent of physical exercise and conditioning, and heart disease. The heart pumps blood to the tissues, supplying them with oxygen and other nutrients.

The pumping action of the heart is accomplished by the rhythmic contraction and relaxation of its muscular wall. During systole (contraction of the muscle), the chambers of the heart become smaller as the blood is ejected. During diastole (relaxation of the muscle), the heart chambers fill with blood in preparation for subsequent ejection. A normal resting adult heart beats approximately 60 to 80 times per minute. Each ventricle ejects approximately 70 mL of blood per beat and has an output of approximately 5 L per minute.

The heart is composed of three layers. The inner layer, or endocardium, consists of endothelial tissue and lines the inside of the heart and valves. The middle layer, or myocardium, is made up of muscle fibers and is responsible for the pumping action. The exterior layer of the heart is called the epicardium.

The heart is encased in a thin, fibrous sac called the pericardium, which is composed of two layers. Adhering to the epicardium is the visceral pericardium. Enveloping the visceral pericardium is the parietal pericardium, a tough fibrous tissue that attaches to the great vessels, diaphragm, sternum, and vertebral column and supports the heart in the mediastinum. The space between these two layers (pericardial space) is filled with about 30 mL of fluid, which lubricates the surface of the heart and reduces friction during systole.


**Heart Chambers**

The four chambers of the heart constitute the right- and left-sided pumping systems. The right side of the heart, made up of the right atrium and right ventricle, distributes venous blood (deoxygenated blood) to the lungs via the pulmonary artery (pulmonary circulation) for oxygenation. The right atrium receives blood returning from the superior vena cava (head, neck, and upper extremities), inferior vena cava (trunk and lower extremities), and coronary sinus (coronary circulation). The left side of the heart, composed of the left atrium and left ventricle, distributes oxygenated blood to the remainder of the body via the aorta (systemic circulation). The left atrium receives oxygenated blood from the pulmonary circulation via the pulmonary veins.

The varying thicknesses of the atrial and ventricular walls relate to the workload required by each chamber. The atria are thin-walled because blood returning to these chambers generates low pressures. In contrast, the ventricular walls are thicker because they generate greater pressures during systole. The right ventricle contracts against low pulmonary vascular pressure and has thinner walls than the left ventricle. The left ventricle, with walls two-and-a-half times more muscular than those of the right ventricle, contracts against high systemic pressure.

Because the heart lies in a rotated position within the chest cavity, the right ventricle lies anteriorly (just beneath the sternum) and the left ventricle is situated posteriorly. The left ventricle is responsible for the apical beat or the point of maximum impulse (PMI), which is normally palpable in the left midclavicular line of the chest wall at the fifth intercostal space.

**Heart Valves**

The four valves in the heart permit blood to flow in only one direction. The valves, which are composed of thin leaflets of fibrous tissue, open and close in response to the movement of blood and pressure changes within the chambers. There are two types of valves: atrioventricular and semilunar.

**Atrioventricular Valves**

The valves that separate the atria from the ventricles are termed atrioventricular valves. The tricuspid valve, so named because it is composed of three cusps or leaflets, separates the right atrium from the
right ventricle. The mitral or bicuspid (two cusps) valve lies between the left atrium and the left ventricle. Normally, when the ventricles contract, ventricular pressure increases, closing the atroventricular valve leaflets. Two additional structures, the papillary muscles and the chordae tendineae, maintain valve closure. The papillary muscles, located on the sides of the ventricular walls, are connected to the valve leaflets by thin fibrous bands called chordae tendineae. During systole, contraction of the papillary muscles causes the chordae tendineae to become taut, keeping the valve leaflets approximated and closed.

**Semilunar Valves**

The two semilunar valves are composed of three half-moon–like leaflets. The valve between the right ventricle and the pulmonary artery is called the pulmonic valve. The valve between the left ventricle and the aorta is called the aortic valve.

**Coronary Arteries**

The left and right coronary arteries and their branches supply arterial blood to the heart. These arteries originate from the aorta just above the aortic valve leaflets. The heart has large metabolic requirements, extracting approximately 70% to 80% of the oxygen delivered (other organs extract, on average, 25%). Unlike other arteries, the coronary arteries are perfused during diastole. An increase in heart rate shortens diastole and can decrease myocardial perfusion. Patients, particularly those with CAD, can develop myocardial ischemia (inadequate oxygen supply) when the heart rate accelerates.

The left coronary artery has three branches. The artery from the point of origin to the first major branch is called the left main coronary artery. Two branches arise off the left main coronary artery: the left anterior descending artery, which courses down the anterior wall of the heart, and the circumflex artery, which circles around to the lateral left wall of the heart. The right side of the heart is supplied by the right coronary artery, which progresses around to the bottom or inferior wall of the heart. The posterior wall of the heart receives its blood supply by an additional branch from the right coronary artery called the posterior descending artery.

Superficial to the coronary arteries are the coronary veins. Venous blood from these veins returns to the heart primarily through the coronary sinus, which is located posteriorly in the right atrium.
Cardiac Muscle

The myocardium is the middle, muscular layer of the atrial and ventricular walls. It is composed of specialized cells called myocytes, which form an interconnected network of muscle fibers. These fibers encircle the heart in a figure-of-eight pattern, forming a spiral from the base of the heart to the apex. During contraction, this muscular configuration facilitates a twisting and compressive movement of the heart that begins in the atria and moves to the ventricles. The sequential and rhythmic pattern of contraction, followed by relaxation of the muscle fibers, maximizes the volume of blood ejected with each contraction. This cyclical pattern of myocardial contraction is controlled by the conduction system.
**Cardiac Care Unit (CCU)**

This is a special unit in the hospital used to treat patients with heart diseases (acute or chronic), thus the unit is most content on the training nurses about any heart and vascular diseases and special tools such as:

- Defibrillator,
- Ventilator,
- Chest X-Ray and Fluoroscopy,
- Electrocardiography (The ECG),
- Hard wire Cardiac Monitoring (Telemetry),
- Echocardiography,
- Endotracheal tube and nursing equipments.

The aim of Cardiac Care Unit (CCU) is early diagnosis and treat the heart diseases such as (Myocardial Infarction) and prevent the complication and death.

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**Cardiac Monitoring**

An ECG provides a tracing of the heart’s electrical currents. Electrodes attach to the client’s chest with adhesive pads and then attach to cables (leads) connected to the electrocardiograph machine. Leads are made up of positive and negative electrodes. The relationship between the positive and negative electrodes is responsible for the deflections seen on the ECG machine. Figure 3.4 shows the correct placement of electrodes.

The most commonly used ECG consists of 12 leads. Six leads are placed on the chest wall (V1–V6). These 6 leads provide a picture of the heart’s electrical activity from a variety of positions on the chest wall. The chest leads are placed on the horizontal axis of the chest.
The limb leads are attached to the arms and legs. The client should be taught to remain as still as possible during ECG assessment and should be positioned in a semireclined position. For continuous ECG monitoring, the use of limb leads is not recommended because limb movement causes an inaccurate reading. Continuous ECG readings are most commonly done using the modified chest lead (MCL) system, which incorporates only three leads. If only three leads are used the white electrode is placed just below the mid-clavicle area on the client’s right side, the black lead is placed below the mid-clavicle area on the client’s left side and the positive (red) is placed at the mid-clavicular region on the client’s left side. If the six lead system is used the client is monitored using the V1 position located at the fourth intercostals position at the right sternal border. V2 is placed at the fourth intercostals space at the left sternal border. V3 is located midway between V2 and V4. V5 is located at the fifth intercostals space at the anterior axillary line. V6 is located at the fifth intercostals space at the midaxillary line. The ground electrode can be placed anywhere but is usually placed under the right clavicle. For accuracy of chest lead placement, the client’s chest hair should be clipped with scissors rather than shaved because shaving can abrade the skin.

shows a normal ECG reading. The P wave represents atrial depolarization. **P-R interval** is the time required for the atria to depolarize and the impulse to travel through the conduction system to the Purkinje fibers. It is measured from the beginning of the P wave to the end of the P-R segment. The **QRS complex** represents the contraction phase of the heart and is measured from the beginning of the Q wave or R wave to the end of the S wave. The **T wave** represents repolarization of the heart.

After you look at the ECG reading for the presence of the P wave, QRS complex, and T wave, you will want to start your evaluation of the heart rate. Measure the rate by counting the number of P-P intervals or R-R intervals on a 6-second ECG strip. Timing should begin with the P wave or the QRS complex and end 30 large blocks later. The heart rate can be determined by looking at a 6-second strip, counting the cardiac cycles and the number of QRS complexes, and multiplying by 10. This method provides an accurate rate analysis of whether the rate is regular or irregular.

A normal rhythm is one that originates in the SA node, is regular, has a rate of 60–100 beats per minute (bpm), has a P wave that is consistent, and is followed by a QRS complex. ECG tracing paper measures electrical impulses in duration of time. Each large block on the paper is 5 mm or 0.20 seconds and contains 25 small blocks. Each small block on the paper is 1 mm or 0.04 seconds. The normal ECG
rhythm has a P-R interval of 0.12–0.20 seconds and has a QRS complex with a duration of 0.04–0.12 seconds.

Myocardial Infarction

Blood supply to the myocardium is interrupted for a prolonged time due to the blockage of coronary arteries. This results in insufficient oxygen reaching cardiac muscle, causing cardiac muscles to die (necrosis). MI is commonly known as a heart attack or called Coronary occlusion. The area of infarction is often due to build-up of plaque over time (atherosclerosis: a condition in which deposits of fats and minerals form on the walls of an artery, especially the aorta or one of the coronary or cerebral arteries, and prevent blood from flowing easily). It may also be due to a clot that develops in association with the atherosclerosis within the vessel. Patients are typically (not always) symptomatic, but some patients will not be aware of the event; they will have what is called a silent MI.

SIGNS AND SYMPTOMS

• Chest pain that is unrelieved by rest or nitroglycerin (a drug which helps the veins and coronary arteries to become wider), unlike angina
• Pain that radiates to arms, jaw, back and/or neck
• Shortness of breath, especially in the elderly or women
• Nausea or vomiting possible
• Maybe asymptomatic, known as a silent MI, which is more common in diabetic patients
• Heart rate >100 (tachycardia) because of sympathetic stimulation, pain, or low cardiac output
• Low blood pressure
• Anxiety
• Restlessness
• Feeling of impending doom
• Pale, cool, clammy skin; sweating (diaphoresis)
• Sudden death due to arrhythmia usually occurs within first hour

Diagnosis

1. Electrocardiography The ECG
2. SGOT, SGPT enzyme
3. C.B.C and ESR
TREATMENT

Treatment is focused on reversing and preventing further damage to the myocardium. Early intervention is needed to have the best possible outcome.

- Administer oxygen, aspirin.
- Administer antiarrhythmics because arrhythmias are common as are conduction Disturbances (Amiodarone Lidocaine).
- Administer antihypertensive to keep blood pressure low.
- Administer thrombolytic therapy within 3 to 12 hours of onset because it can re-establish blood flow in an occluded artery, reduce mortality, and halt the size of the infarction.
- Heparin following thrombolytic therapy.
- Administer calcium channel blockers as they appear to prevent reinfarction and ischemia, only in non-Q-wave infarctions (Verapamil, Diltiazem).
- Administer analgesics to relieve pain, reduce pulmonary congestion, and decrease myocardial oxygen consumption (Morphine).
- Administer nitrates to reduce ischemic pain by dilation of blood vessels; helpsto lower BP (Nitroglycerin).
- Place patient on bed rest in CCU.
- No bathroom. Bedside commode only.
- Low-fat, low-caloric, low-cholesterol diet.

NURSING CARE

- Monitor:
  - Cardiovascular—look for changes or instability in pulse, heart sounds, Murmur, ECG.
  - Respiration—look for changes, fluid in lung fields, shortness of breath.
  - Vital signs—check for changes in BP, pulse quality, peripheral pulses.
  - Pulse-oximetry monitoring.
- Explain to the patient:
  - Change to a low-fat, low-cholesterol, low-sodium diet.
  - The difference between angina pain and myocardial infarction pain.
  - When to take nitroglycerin.
  - Medication.
  - Smoking cessation.
  - Limit activities.
  - Need for cardiac rehabilitation.
  - Stress reduction.
• Lifestyle changes such as increase in exercise, diet changes.

**Cardiac Tamponade**

A large amount of liquid accumulates in the sack around the heart (pericardium), creating pressure on the heart that reduces the filling of ventricles with blood. This results in a low volume of blood being pumped with each contraction. The accumulating pressure within the pericardium may be due to fluid, pus, or blood. The end result is decreased stroke volume and cardiac output. The cause of tamponade may be trauma, postoperative, post-MI, uremia, or cancer. The fluid may develop rapidly or over time, depending on cause. Tamponade is a life-threatening condition. The seriousness is related to the amount of pressure within the heart and the resulting decrease in ventricular filling.

**Cardiomyopathy**

The middle layer of the heart wall that contains cardiac muscle (myocardium) weakens and stretches, causing the heart to lose its pumping strength and become enlarged. The heart remains functional; however, contractions are weak, resulting in decreased cardiac output. Most are idiopathic and not related to the major causes of heart disease. The three types of cardiomyopathy are:

1. Dilated cardiomyopathy (common): The heart muscle thins and enlarges, which leads to congestive heart failure. Progressive hypertrophy and dilatation result in problems with pumping action of ventricles.

2. Hypertrophic cardiomyopathy: The ventricular heart muscle thickens, resulting in outflow obstruction or restriction. There is some blood flow present.

3. Restrictive cardiomyopathy (rare): The heart muscle becomes stiff and restricts blood from filling ventricles, usually as a result of amyloidosis, radiation, or myocardial fibrosis after open-heart surgery.
Heart Failure
[Congestive Heart Failure (CHF)]

In congestive heart failure, the heart is unable to pump sufficient blood to maintain adequate circulation. This results in a backup of blood and the extra pressure may cause accumulation of fluid into the lungs. Heart failure is primarily due to problems with ventricular pumping action of the cardiac muscle, which may be caused by diseases such as myocardial infarctions (heart attacks), endocarditis (infection in the heart), hypertension (high blood pressure), or valvular insufficiency. When disease affects primarily the left side of the heart, the blood will back up into the lungs. When disease affects primarily the right side of the heart, the systemic circulation may be overloaded. When the heart failure becomes significant, the whole circulatory system may be compromised.

SIGNS AND SYMPTOMS

• Extra heart sounds (normal heart sounds were described in the beginning):
  - S3: Soft sound caused by vibration of the ventricular wall caused by rapid filling. Heard after S2 heart sound. Heard over the apex of the left ventricle, fourth intercostal space along the mid-clavicular line. Best heard when patient lies on left side. Usually indicates heart failure.
  - S4: Vibration of valves and the ventricular walls during the second phase of ventricular filling when the atria contract. Heard before S1, in the same location as S3, usually due to a “stiff heart.”
  - Murmur: Sounds of turbulence caused by blood flow. Heard anywhere around the heart.
• Congestive heart failure
• Fatigue
• Syncope (condition in which someone becomes unconscious for a short time because of reduced flow of blood to the brain)
• Chest pain

HALLMARK Signs and Symptoms according the cases

- Early:
  • Basilar rales from fluid overload
  • Nocturia
• Exertional dyspnea
• Fatigue
• Positive hepatojugular reflux from liver congestion
• S3 heart sound

- Mid:

• Cough
• Orthopnea (a condition in which a person has great difficulty in breathing while lying down)
• Discomfort in right upper abdomen due to hepatomegaly
• Edema
• Cardiomegaly

- Late:

• Anasarca—generalized edema from ineffective pump function
• Frothy or pink sputum from capillary permeability

Diagnosis

- Electrocardiography The ECG
- CBC may show anemia—Hgb less than 12 in female, less than 14 in male
- Chest x-ray.

TREATMENT & NURSING CARE

1. Administer diuretics for symptom control resulting in patient comfort by reducing blood volume.
2. Administer vasodilator to reduce preload, relieve Dyspnea
3. Administer anticoagulants in patients with severe heart failure, as they have a propensity to develop thrombus and emboli; those with concurrent atrial fibrillation will also need anticoagulation.
4. Monitor vital signs and look for changes.
   - Record fluid intake and output—weigh daily to assess for fluid overload.
   - Position patient in semi-Fowler’s position to ease breathing.
   - Administer oxygen as ordered because it helps to decrease workload of heart.
5. Tell the patient:
   - Eat foods low in sodium to avoid fluid retention. (For these patients, there is no such thing as “low-salt” cold cuts.)
- Raise legs when sitting to lessen dependent edema.
- Call the physician, nurse practitioner, or physician assistant if experiencing fluid retention, such as a weight gain of several pounds in 1 to 2 days.

**Valve diseases**

*Aortic Insufficiency (AI)*

Leakage of the aortic valve causes blood to flow back into the left ventricle. This results in increased blood volume in the left ventricle, causing it to dilate and become hypertrophic, thus reducing blood flow from the heart. The usual cause is incompetent cusps or leaflets of the valve, from endocarditis, valve structural problems, connective tissue disorders, rheumatic heart disease, hypertension, arteriosclerosis, and other conditions.

**PROGNOSIS**

Prognosis depends on the severity of the valve damage and the acuteness of the symptoms in the patient.

**SIGNS AND SYMPTOMS**

- Difficulty breathing (dyspnea) because of ineffective pumping
- Fatigue
- Orthopnea
- Palpations because the heart is irritable due to improper blood flow

**Diagnosis**

- X-ray shows an enlarged left ventricle.
- Echocardiogram confirms the left ventricle is enlarged and the valve is working inefficiently.

**TREATMENT**

Treatment is based on the gravity of the symptoms of the patient.
- Aortic valve replacement or repair.
• Administer anticoagulant medication following surgery to prevent thrombus around the aortic valve: (heparin, warfarin, enoxaparin)

NURSING CARE

• Place patient in a high Fowler’s position to facilitate breathing.
  - Oxygen.
  - Pain management.
• Monitor for:
  - Pulmonary edema because of backflow to the lungs.
  - Thrombus because a foreign object (valve) is in place, and may cause clotting.
  - Arrhythmias because the heart may be irritable secondary to surgery.
  - Weigh the patient daily to be aware of fluid overload.
• Explain to the patient:
  - Schedule rest periods during the day.
  - Restrict diet to low-sodium and low-fat foods.

Mitral Insufficiency

Leakage of the mitral valve causes blood to flow back from the left ventricle into the left atrium. As a result, blood might flow back into the lungs. Mitral regurgitation is due to an incompetent valve, damaged from rheumatic fever, or endocarditis.

PROGNOSIS

The prognosis may be chronic with stabilization of symptoms, or acute, usually after myocardial infarction, leading to valve replacement.

SIGNS AND SYMPTOMS

• Orthopnea due to the pressure rising into the atria, causing backflow into the lungs.
• Fatigue because of an ineffective heart.
• Systolic murmur at the apex, S3 gallop.
• Left ventricular hypertrophy—the size of the ventricle can reflect the amount of regurgitation.
Diagnosis

- Echocardiogram shows the underlying etiology of the insufficiency.
- Cardiac catheterization depicts the flow through the mitral valve; can measure amount of regurgitation as well as pressures in the chambers.

*Mitral Stenosis*

In mitral stenosis, scar tissue secondary to rheumatic fever forms on the mitral valve. This causes it to narrow, increasing resistance to blood flow between the left ventricle and left atrium, which means the heart needs to pump harder to maintain blood flow.

**PROGNOSIS**

Mitral valve stenosis may be asymptomatic for years, never needing attention. However, eventually symptoms may occur and progress, necessitating intervention. Medication may be enough, or surgical intervention may be necessary.

**SIGNS AND SYMPTOMS**

- Murmur at apex
- Difficulty breathing (dyspnea) on exertion
- Fatigue because of a poorly functioning heart
- Weakness because the heart is working inefficiently
- Palpations because the heart needs to work harder to pump blood

Diagnosis

- Cardiac catheterization depicts the flow through the mitral valve.
- X-ray shows enlarged left atrial and left ventricle.

**NURSING INTERVENTION (Mitral Stenosis Mitral Insufficiency)**

- Place patient in a high Fowler’s position to facilitate breathing.
- Monitor for:
  - Pulmonary edema because of fluid overload.
  - Thrombus because of a prosthetic valve.
  - Arrhythmias because the heart may be irritable during and after surgery.
- Intake and output to monitor fluid balance.
- Weigh the patient daily to check fluid overload.
• Explain to the patient:
  - Schedule rest periods during the day.
  - Restrict diet to low-salt and low-fat foods.

Mitral Valve Prolapse (MVP)

The mitral valve bulges back into the left atrium, allowing blood to flow backwards from the left ventricle into the left atrium. This is a common problem and is not considered a serious condition. It is often congenital.

PROGNOSIS

Most patients with MVP are unaware they have it until symptoms start occurring. Often it is an incidental finding on an echocardiogram. A large majority of patients require no treatment other than endocarditis prophylaxis during dental and unsterile procedures. Some patients progress with their symptoms, developing arrhythmias and requiring medications. Severe MVP may require mitral valve repair or replacement.

SIGNS AND SYMPTOMS

• Asymptomatic because the valve leaflets do not bulge greatly
• Palpitations because the valve is not operating properly
• Systolic click and/or late systolic murmur
• Chest pain
• Fatigue
• Syncope (a condition in which someone becomes unconscious for a short time because of reduced flow of blood to the brain. Also called fainting fit )
• Dyspnea

NURSING INTERVENTION

• Place patient in a high Fowler’s position to facilitate breathing.
• After surgery, monitor for:
  - Pulmonary edema to look for blood backflowing into lungs.
  - Heart failure to assess for a poorly functioning heart.
  - Thrombus because of a prosthetic valve.
- Arrhythmias because the heart may be irritated after surgery.
- Arterial Blood Gas (ABG) to check for adequate oxygenation and acid/base balance.
- Weigh the patient daily to assess for fluid overload.

• Explain to the patient proper recovery from major surgery:
  - Schedule rest periods during the day.
  - Restrict diet to low-sodium and low-fat.
CONGENITAL HEART DISEASES

- Abnormalities in the structure of the heart that are present at birth, due to abnormal or incomplete development of the heart.

Causes:

1. Hereditary.
2. Viral.
3. Vitamin deficiencies.

Types of congenital heart disease:

1. Cyanotic heart disease (the deoxygenated blood is mixed in the systemic circulation; the child is usually blue).
2. A cyanotic heart disease (the deoxygenated blood is not mixed in the systemic circulation; the child is not blue).

Common Heart Defects:

There are many types of heart defects; it can affect any part of the heart or its surrounding structures.

Cyanotic heart disease:

1. Tetralogy of Fallot (TOF):

   Tetralogy of Fallot is a combination of four heart defects; it includes:

   1. Pulmonary artery stenosis.
   2. Right ventricular hypertrophy.
   3. Ventricular septal defect.
   4. Overriding aorta (that is connected to both the left and right ventricles).

SIGNS AND SYMPTOMS

- Chest pain
- Fatigue
- Cyanosis
- Dyspnea
• Clubbing of fingers

Infants with Tetralogy of Fallot (TOF) might have a history of acute cyanosis and heart murmur at birth that worsens over the first year of life. Acute episodes of cyanosis and anoxia, referred to as blue spells or tet attacks, occur during crying or feeding because the infant’s oxygen demands are greater than the blood supply. Children with TOF have noticeable cyanosis, increased respiratory rate, gasping respirations, clubbing of the fingers, and growth retardation. Arterial blood gases reveal metabolic acidosis. When oxygenation is compromised, a child with TOF assumes a squatting position which decreases blood flow to the extremities. Children with TOF are at risk for developing emboli, seizures, loss of consciousness, or sudden death following an anoxic episode.

Surgical treatment is palliative shunt (Blalock-Taussig procedure) to increase blood flow to the lungs thereby providing for better oxygenation. Complete elective repair, involving correction of each of the four defects, is usually performed in the first year of life. Surgical repair requires the child to be placed on cardiopulmonary bypass. The operative mortality is less than 5% for total correction of TOF. Nursing care for the infant or child with a hypoxic or “tet” attack involves placing the child in knee chest position, providing supplemental oxygen, and medicating with morphine sulfate to reduce spasms and slow respirations.

2. **Transposition of the Great Arteries:**

The pulmonary artery and the aorta are switched:

1. so that the aorta originates from right ventricle.
2. the pulmonary artery from the left ventricle.

_A cyanotic heart disease:_

1. **Patent Ductus Arteriosus:**

   - The ductus arteriosus is a blood vessel in the fetus that diverts circulation away from the lungs and sends it directly to the body.
   - It usually closes shortly after birth.
   - If it doesn't close this leads to patent ductus arteriosus.
2. **Caorctation of aorta:**

There is a narrowing of a portion of the aorta, so decreases the blood flow from the heart to the rest of the body.

3. **Septal defect:**

- Atrial Septal Defect: opening in the wall between left and right atrium.
- Ventricular Septal Defect it is opening in the wall between the left and right ventricles (One of the most common congenital heart defects).

Signs and symptoms of congenital heart disease:

- Some time no any symptoms and can be discover by routine examination.
- The symptom may be immediately after delivery.
- Or at childhood.
- Or at adolescent.

Other S&S

1. Cyanosis on the lips and tongue which increase in case of crying.
2. Increased breathing rate or difficulty breathing
3. Poor appetite or difficulty in feeding.
4. Failure to gain weight or weight loss.
5. Abnormal sound of the heart.

Nursing care:

1. Register vital sign.
2. Register weight of the baby daily.
3. Rest.
4. Prevention of infection.
5. Promote respiration.
6. Psychological support.

Complication: Congestive heart failure.
**Congestive heart failure**

It is a clinical syndrome of heart disease when the R or L ventricle cannot contract enough to supply tissues with adequate blood.

**Signs and symptoms:**

*Left sided heart failure:*

- Weakness.
- Dyspnea.
- Cardiac hypertrophy.
- Cyanosis may be present or not.

*Right side heart failure:*

- Edema.
- Hypertrophy of liver.

**Nursing care:**

1. Bed rest.
2. Put in special position to promote respiration.
3. Oxygen.
4. Good nutrition.
5. Give diuretic.
7. Decrease fluid and salt intake.

Psychological support for child and family.

**General test in heart problem**

Magnetic resonance imaging (MRI)
Cardiac Catheterization (Angiography)

**Open Heart Surgery**

Nursing care before Open Heart Surgery:

- 4- psychological support
- 5- teach the patient on Deep breathing
- 6- exercise
7- explain to the patient about operative
8- giving I.V fluids, foly catheter
9- work X-ray, blood examination
10- check vital signs
11- work ECG
12- Physical hygiene by bath clean and shaving and sterile area of operation.

Nursing care after Open Heart Surgery:

1. check vital signs all 15 minute in first day after operative.
2. provide oxygen and may be need to Endotracheal Intubation.
3. balance fluid and electro by check intake and output fluid
4. weight daily, check bleeding, edema and liver
5. assess of cardiac output
6. observation any abnormal signs on patient cyanosis, pallor, Dyspnea, couscous thrombosis.
7. observation the color and temperature and movement of limbs.
8. relive the pain by giving Antibiotic and analgesic
9. encourage the patient on Deep breathing and cough to reduce the pain.
10. after discharge from hospital:

- Nutrition; increased protein, vitamins, carbohydrates, and reduce from salt and sodium, and limit the amount intake fluid.
- Drugs; must know uses and rout and side effect.
- Activity; reduce the activity in primary and increased gradually such as walk and prevent crowding area and climb up ladder one or two in first week and increased gradually.

complication

1. Myocardial Infarction
2. Heart Failure
3. Renal Failure
4. Cardiac Tamponade
5. Low in blood volume
6. Embolism
7. Low arterial pressure