OUR LADY OF FATIMA UNIVERSITY

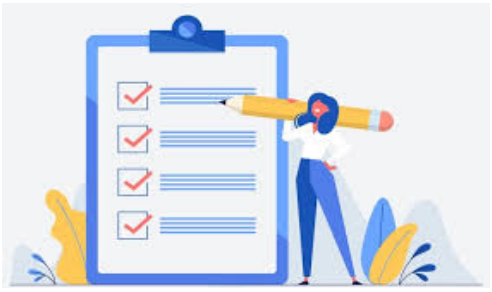
COURSE UNIT

BACHELOR OF SCIENCE IN NURSING:
NCMB 418 - CARE OF THE CLIENT WITH LIFE-THREATENING CONDITIONS, ACUTELY ILL / MULTI-ORGAN PROBLEMS, HIGH ACUITY AND EMERGENCY SITUATION (ACUTE AND CHRONIC)

COURSE MODULE	COURSE UNIT	WEEK
2	8	
Cardiovascular Emergencies: Congestive Heart Failure		

CHECK LIST

- ✓ Read course and unit objectives
- ✓ Read study guide prior to class attendance
- ✓ Read required learning resources; refer to unit terminologies for jargons
- ✓ Proactively participate in classroom discussions
- ✓ Participate in weekly discussion board (Canvas)
- ✓ Answer and submit course unit tasks



UNIT EXPECTED OUTCOMES (UEOs)

At the end of this unit, the students are expected to:

Cognitive:

1. Discuss the alterations of the cardiovascular system in relation to congestive heart failure (CHF)
2. Identify diagnostics and presenting signs and symptoms of clients with congestive heart failure and the nurses' roles.

3. Discuss and apply emergency nursing management to the client experiencing congestive heart failure.

Affective:

1. Listen attentively during class discussions
2. Demonstrate tact and respect when challenging other people's opinions and ideas
3. Accept comments and reactions of classmates on one's opinions openly and graciously.

Psychomotor:

1. Participate actively during class discussions
2. Confidently express personal opinion and thoughts in front of the class

REQUIRED READINGS

Schumacher, L., & Chernecky, C. C. (2010). *Saunders nursing survival guide: critical care & emergency nursing*. St. Louis, Mo.: Elsevier Saunders.

STUDY GUIDE

Heart failure, also known as **congestive heart failure**, is a condition in which the ventricles cannot pump forcefully enough to send blood out to meet the metabolic needs of the body (Mayo Clinic, 2020). Certain conditions, such as narrowed arteries of the heart (coronary artery disease) or high blood pressure, gradually leave the heart too weak or stiff to fill and pump efficiently.

This condition can involve the left side (left ventricle), right side (right ventricle) or both sides of the heart. Generally, congestive heart failure begins with the left side, specifically the left ventricle, the heart's main pumping chamber.

Table 1. Types of Congestive Heart Failure

Type of heart failure	Description
Left-sided heart failure	Fluid may back up in your lungs, causing shortness of breath.
Right-sided heart failure	Fluid may back up into your abdomen, legs and feet, causing swelling.
Systolic heart failure	The left ventricle can't contract vigorously, indicating a pumping problem.
Diastolic heart failure (also called heart failure with preserved ejection fraction)	The left ventricle can't relax or fill fully, indicating a filling problem.

Source: mayoclinic.org (2020)

Risk Factors

1. Hypertension
2. Diabetes mellitus
3. Congenital heart defects
4. Lifestyle: cigarette/tobacco smoke, alcohol use
5. Obesity, overweight
6. Valvular heart disease

Clinical Manifestations:

Left-sided vs. Right-sided Heart Failure (Refer to the figure below)

- LVF usually occurs first (pulmonary congestion) which causes RVF(systemic congestion)

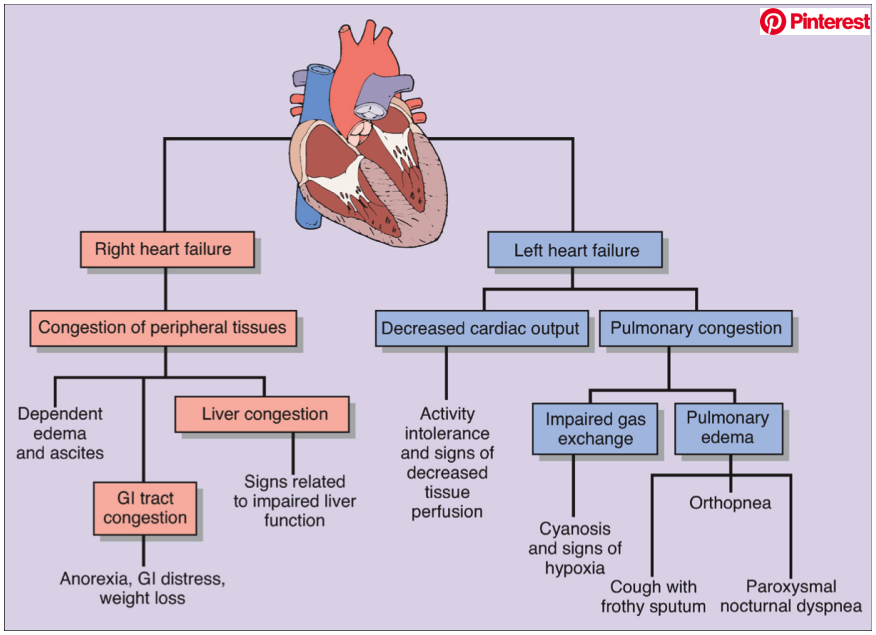


Figure 1. Comparison between the Left-sided and the Right-sided Heart Failure

Classification system

1. NYHA Functional Classification
2. AHA/ACC Staging System

Treatment:

1. Oxygenation
2. Pharmacologic – inotropes, vasodilators, ACE inhibitors, diuretics
3. Surgery – pacemaker, mechanical heart pump, heart transplant
4. Nursing Management: Prevention: (focus = risk reduction)

- ✓ Maintenance of physical functioning (promotion of cardiac wellness)
- ✓ Adherence to treatment regimen
- ✓ Weight monitoring
- ✓ Diet and lifestyle modification; limit sodium intake
- ✓ Smoking cessation
- ✓ Read labels (medication and food)
- ✓ Limit alcohol intake
- ✓ Rest period allotment; reducing/managing stress
- ✓ Controlling blood pressure

Complications

1. Kidney damage / failure – due to reduced blood flow to the kidneys
2. Valvular problems - valves of the heart may not function properly if it is enlarged or if the pressure is very high
3. Arrythmias / dysrhythmias
4. Liver problems – CHF leads to a buildup of fluid that puts too much pressure on the liver

TERMINOLOGIES

Congestive heart failure – the study of the interrelationships and movement of the blood flow

Left-sided heart failure – the left ventricle of the heart no longer pumps enough blood around the body. As a result, blood builds up in the pulmonary veins causing shortness of breath, trouble breathing or coughing, especially during physical activity; the most common type

Right-sided heart failure – the right ventricle of the heart is too weak to pump enough blood to the lungs causing blood to build up in the veins. The increased pressure inside the veins can push fluid out into surrounding tissue. This leads to a build-up of fluid in the legs, or less commonly in the genital area, organs or the abdomen

FURTHER READINGS

Emergency Nurses Association. (2019). *Sheehy's Manual of Emergency Care, 7th ed*. St. Louis: Elsevier Mosby. pp 504-593

Institute for Quality and Efficiency in Health Care. (2018, January 25). Types of heart failure [chapter], *InformedHealth.org*. Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK481485/

UNIT TASKS

Create an infographic material or a health teaching information material on the client activities and/or independent nursing management for the NYHA Functional Classification or the AHA/ACC Staging System

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REFERENCES

Department of Health (Kagawaran ng Kalusugan). https://www.doh.gov.ph

Emergency Nurses Association. (2019). *Sheehy's Manual of Emergency Care, 7th ed*. St. Louis: Elsevier Mosby.

Heart Disease and Stroke Statistics 2017 Update: A Report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation. 2017, January 25, Retrieved from http://circ.ahajournals.org/content/early/2017/01/25/CIR.0000000000000485.

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Mayo Clinic. (2020). Heart failure. Retrieved from https://www.mayoclinic.org/diseases-conditions/heart-failure/symptoms-causes/syc-20373142

Philippine Statistics Office (PSA). (2019). Registered deaths in the Philippines, 2017 [report]. Retrieved from https://psa.gov.ph/vital-statistics/id/138794

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COURSE MODULE	COURSE UNIT	WEEK
2	8	9
Gastrointestinal Emergencies		

CHECK LIST

- ✓ Comprehend the course unit objectives.
- ✓ Peruse through the study guide prior to class attendance.
- ✓ Analyze the required learning resources; refer to course unit terminologies for jargons.
- ✓ Proactively participate in classroom discussions.
- ✓ Participate in weekly discussion board (Canvas).
- ✓ Answer and submit course unit tasks on time.

UNIT EXPECTED OUTCOMES (UEOs)

At the end of this unit, the students are expected to:

1. Discuss the pathophysiologic responses of critically ill clients with gastrointestinal emergencies.
2. Analyze the health status/competence of critically ill clients with gastrointestinal emergencies.
3. Formulate a plan of care based on critically ill clients' priorities to address the gastrointestinal emergencies.

4. Institute appropriate corrective actions to prevent or minimize harm arising from adverse effects.
5. Apply safe and quality interventions to address the needs of critically ill clients with gastrointestinal emergencies.
6. Offer client health education using selected planning models as appropriate for critically ill clients with gastrointestinal emergencies.
7. Document nursing care and services rendered and processes outcomes of the findings/ result of the client data.
8. Ensure completeness, integrity, safety, accessibility, and security of information.
9. Adhere to protocols of confidentiality in safekeeping and releasing of records and other information.
10. Evaluate the health status / competence and/or expected outcomes of nurse-client working relationship of critically ill clients with gastrointestinal emergencies.

REQUIRED READINGS

Burns, S. and Delgado, S. (2019). Essentials of Critical Care Nursing, 4th ed. USA: McGraw-Hill.

STUDY GUIDE

Gastrointestinal Bleeding – a symptom of an underlying disease which can result from a variety of disease that occur in the esophagus, stomach, small intestine, large intestine, etc. Bleeding can also result from underlying clotting disorders such as those with liver disease.

Causes:

- Peptic ulcer – *Helicobacter pylori* is a known aggressive factor; immunocompromised persons have increased risk for developing ulcers
- Benign and malignant neoplasms of the GI tract
- Esophageal varices result from portal hypertension; usually related to chronic alcoholism
- Inflammatory conditions:
    a. Gastroesophageal reflux (GERD) – acid contents of stomach flow back into the esophagus
    b. Ulcerative colitis – commonly found in colon and rectum
    c. Crohn's disease affects the proximal colon and terminal ileum

Diagnostics:

1. Endoscopy
    a. EGD for visualization of upper GI tract
    b. Colonoscopy for visualization of the colon
    c. Sigmoidoscopy for visualization of the sigmoid colon
2. Radiographic procedures – upper GI series, barium enema

Treatment:

1. For esophageal varices – the first line treatment is vasopressin (Pitressin)
2. Use of balloon tamponade (Sengstaken-Blakemore, Minnesota tubes)

3. First-line treatment to decrease bleeding
    a. Volume replacement (especially for signs of shock)
    b. IV fluid and/or blood products
    c. Consider gastric lavage

Pancreatitis – a serious illness caused by the inflammation of the pancreas

- Pain is usually the 1st symptom aggravated when lying down
- Turner's (reddish-purple or greenish-brown discoloration on flank area) and Cullen's (bluish discoloration around navel) signs are evidences of necrotizing pancreatitis
- Treatment:
    a. Pharmacologic: Demerol (meperidine), anticholinergics
    b. Surgery: usually a risky option due to acutely ill presentation of patient

Liver failure – also known as hepatic failure is a condition in which the organ fails to fulfill its functions or is unable to meet the demands placed upon it.

- Signs and symptoms are seen when liver's function cannot be carried out
- Treatment focuses on identification of cause, correct the cause or slow progression, and supportive therapy

TERMINOLOGIES

Gastrointestinal bleeding (GI bleed) – also known as gastrointestinal hemorrhage; all forms of bleeding in the gastrointestinal tract, from the mouth to the rectum**.**

FURTHER READINGS

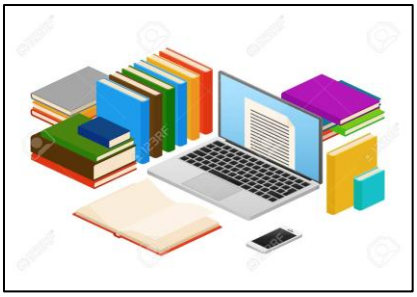
Emergency Nurses Association. (2019). *Sheehy's Manual of Emergency Care, 7th ed*. St. Louis: Elsevier Mosby. pp 504-593

Hadi, A., et.al. (2020 June). Coronavirus Disease-19 (COVID-19) associated with severe acute pancreatitis: Case report on three family members, *World Pancreatology* 20(4):665-667. Retrieved from https://www.sciencedirect.com/science/article/pii/S1424390320301472

UNIT TASKS

Read the ScienceDirect.com article of Hadi, et. al and make a reflective 300-500-word essay relating it to the present healthcare and nursing situation

REFERENCES



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Hadi, A., et.al. (2020 June). Coronavirus Disease-19 (COVID-19) associated with severe acute pancreatitis: Case report on three family members, *World Pancreatology* 20(4):665-667. Retrieved from https://www.sciencedirect.com/science/article/pii/S1424390320301472

Hinkle, J. and Cheever, K. (2017). *Brunner & Suddharth's Textbook of Medical-Surgical Nursing*, 14th ed. USA: Wolters Kluwer

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COURSE MODULE	COURSE UNIT	WEEK
2	9	10
Metabolic Emergencies		

CHECK LIST

- ✓ Read course and unit objectives
- ✓ Read study guide prior to class attendance
- ✓ Read required learning resources; refer to unit terminologies for jargons
- ✓ Proactively participate in classroom discussions
- ✓ Participate in weekly discussion board (Canvas)
- ✓ Answer and submit course unit tasks

UNIT EXPECTED OUTCOMES (UEOs)

At the end of this unit, the students are expected to:

1. Discuss the pathophysiologic responses of critically ill clients with metabolic emergencies.
2. Analyze the health status/competence of critically ill clients with metabolic emergencies.
3. Formulate a plan of care based on critically ill clients' priorities to address the metabolic emergencies.
4. Institute appropriate corrective actions to prevent or minimize harm arising from adverse effects.

5. Apply safe and quality interventions to address the needs of critically ill clients with metabolic emergencies.
6. Offer client health education using selected planning models as appropriate for critically ill clients with metabolic emergencies.
7. Document nursing care and services rendered and processes outcomes of the findings/ result of the client data.
8. Ensure completeness, integrity, safety, accessibility, and security of information.
9. Adhere to protocols of confidentiality in safekeeping and releasing of records and other information.
10. Evaluate the health status / competence and/or expected outcomes of nurse-client working relationship of critically ill clients with metabolic emergencies.

REQUIRED READINGS

Burns, S. and Delgado, S. (2019). Essentials of Critical Care Nursing, 4th ed. USA: McGraw-Hill.

STUDY GUIDE

The endocrine system regulates metabolic and tissue functions, growth and development, moods and emotions, and maintain homeostasis in response to stress. The main organ involved is the pancreas.

The Pancreas – an organ with both endocrine and exocrine functions.

- Primary Endocrine Cells
  1. Alpha – Produce glucagon which helps maintain normal blood sugar levels through the breakdown of glycogen (glycogenolysis) and the formation of glycogen from fats and proteins (gluconeogenesis).
  2. Beta – Produce insulin, which is the key that allows cells to be permeable to glucose along with amino acids, potassium, magnesium, and phosphate.
  3. Delta – Secrete somatostatin, which inhibit growth hormone, thyroid-stimulating hormone, insulin, glucagon, and other gastrointestinal hormones.

Diabetes Mellitus (DM) – a disorder of the endocrine system that causes alterations in glucose metabolism. It is a chronic condition in which the body is unable to metabolize glucose due to lack of effective insulin. It is an imbalance between insulin availability and need

A. Diabetic Ketoacidosis – one of the most serious metabolic crises that can result from hyperglycemia in patients with uncontrolled diabetes mellitus
   1. Causes:
      a. New-onset DM, undiagnosed Type I

b. Presence of illness or infection
c. Alcohol or drug abuse
d. Medical conditions: MI, pancreatitis, abdominal disorders
e. Medications that interfere with insulin secretion (i.e. hydrocortisone, phenytoin, sympathomimetics)

2. Clinical Manifestations:
   a. Hyperosmolar state
   b. Total body dehydration
   c. Electrolyte imbalances
   d. Ketoacidosis (ketonuria) – hallmark sign
   e. Kussmaul's respirations
   f. Fruity breath odor
3. Diagnostics: CBG, urinalysis, ABGs, BUN-creatinine, serum electrolytes
   - Serum osmolality – the concentration of solutes in blood; increased in hyperglycemia, DKA, HHS, methanol poisoning, and nephrogenic diabetes insipidus (normal range = 280-300mOsm/kg
   - Anion gap – helps determine the cause of metabolic acidosis

✓ Serum osmolality = (2Na) + (serum glucose / 18) + (BUN / 2.8)
✓ Anion gap = serum Na + serum K; or
= serum Cl + serum HCO3

4. Treatment:
   a. Goal: correction of acidosis and ketosis, correction of serum glucose levels, and prevention of complications
   b. Fluid replacement (normal saline = fluid of choice)
   c. Reverse ketosis and correct acidosis
   d. Replace electrolytes

B. Hyperglycemic Hyperosmolar Syndrome (HHS) – also a serious metabolic complication of diabetes mellitus; formerly known as HHNK
   1. Causes:
      a. omission or sudden decrease in oral hypoglycemic dose
      b. TPN or tube feedings without sufficient water
      c. Renal disorder treatment (Peritoneal dialysis)
   2. Clinical Manifestations: similar with DKA but without the ketoacidosis
   3. Treatment
      a. Goal of treatment: rapid fluid replacement to correct dehydration
      b. Decrease glucose levels

C. Syndrome of Inappropriate Antidiuretic Hormone
   ➢ Caused by excessive release of antidiuretic hormone.

- The syndrome is characterized by increased water reabsorption in the kidneys, serum sodium dilution (hyponatremia), and elevated serum levels of ADH.
- Goal of treatment: elimination of the cause

TERMINOLOGIES

Diabetes Mellitus – disorder of the endocrine system that causes alterations in glucose metabolism

FURTHER READINGS

Emergency Nurses Association. (2019). *Sheehy's Manual of Emergency Care, 7th ed*. St. Louis: Elsevier Mosby. pp 504-593

Goldman, N., Fink, D., Cai, J., Lee, Y, and Davies, Z. (2020 August). High prevalence of COVID-19-associated diabetic ketoacidosis in UK secondary care, *Diabetes Research and Clinical Practice vol.166*. Retrieved from https://www.sciencedirect.com/science/article/pii/S016882272030543X

UNIT TASKS

Study questions:

Betty Cooper, 25-y/o-female, is admitted to the emergency department with decreasing level of consciousness. She is 98lbs and stands at 5ft. She has a history of diabetes mellitus since she was 9 years of age. A physical assessment and laboratory data reveal the following:

- Dry skin, poor turgor
- RR = 40cpm, rapid and deep & labored
- HR = 118bpm, weak pulse
- Temp = 98°F
- BP = 110/70 mmHg
- ABG: pH = 7.15; HCO3; 13mEq/L; pCO2 = 35 mEq/L

> Serum glucose = 504mg/dl
> Serum Na = 130 mEq/L
> Serum K = 5 mEq/L
> Serum Cl = 108 mEq/L
> BUN = 74.68 mg/dL

1. Calculate Betty's serum osmolality.
2. What type of diabetes mellitus does Betty possibly have? Why?
3. Which complication of diabetes mellitus does Xia possibly have, diabetic ketoacidosis or hyperglycemic hyperosmolar state? Why?
4. What is the 1st priority nursing management and medical management? Why?

REFERENCES

Burns, S. and Delgado, S. (2019). Essentials of Critical Care Nursing, 4th ed. USA: McGraw-Hill.

Centers for Disease Control and Prevention (CDC) (n.d.). https://www.cdc.gov/

Department of Health (Kagawaran ng Kalusugan). (n.d). https://www.doh.gov.ph

Emergency Nurses Association. (2019). *Sheehy's Manual of Emergency Care, 7th ed*. St. Louis: Elsevier Mosby.

Goldman, N., Fink, D., Cai, J., Lee, Y, and Davies, Z. (2020 August). High prevalence of COVID-19-associated diabetic ketoacidosis in UK secondary care, *Diabetes Research and Clinical Practice vol.166*. Retrieved from https://www.sciencedirect.com/science/article/pii/S016882272030543X

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COURSE MODULE	COURSE UNIT	WEEK
2	10	11
Management of Clients with Renal Problems – Critically ill and/or needing Emergencies		

CHECK LIST

- ✓ Comprehend the course unit objectives.
- ✓ Peruse through the study guide prior to class attendance.
- ✓ Analyze the required learning resources; refer to course unit terminologies for jargons.
- ✓ Proactively participate in classroom discussions.
- ✓ Participate in weekly discussion board (Canvas).
- ✓ Answer and submit course unit tasks on time.

UNIT EXPECTED OUTCOMES (UEOs)

At the end of this unit, the students are expected to:

1. Discuss the pathophysiologic responses of critically ill clients with renal emergencies.
2. Analyze the health status/competence of critically ill clients with renal emergencies.
3. Formulate a plan of care based on critically ill clients' priorities to address the renal emergencies.
4. Institute appropriate corrective actions to prevent or minimize harm arising from adverse effects.
5. Apply safe and quality interventions to address the needs of critically ill clients with renal emergencies.

6. Offer client health education using selected planning models as appropriate for critically ill clients with renal emergencies.
7. Document nursing care and services rendered and processes outcomes of the findings/ result of the client data.
8. Ensure completeness, integrity, safety, accessibility, and security of information.
9. Adhere to protocols of confidentiality in safekeeping and releasing of records and other information.
10. Evaluate the health status / competence and/or expected outcomes of nurse-client working relationship of critically ill clients with renal emergencies.

REQUIRED READINGS

Burns, S. and Delgado, S. (2019). Essentials of Critical Care Nursing, 4th ed. USA: McGraw-Hill.

STUDY GUIDE

Kidney (renal) failure is when kidneys don't work as well as they should. It occurs when the kidneys lose the ability to sufficiently filter waste from the blood. Many factors can interfere with the kidney health and function.

A. Acute Tubuluar Necrosis (Acute renal failure) – frequently used to identify common renal injuries that are results of nephrotoxic and ischemic renal injuries
   1. Causes:
      a. Prerenal - represents the most common form of kidney injury (i.e. fluid depletion)
      b. Intrarenal - direct damage to the kidneys causes a sudden loss in kidney function
      c. Post-renal - an obstruction in the urinary tract below the kidneys causes waste to build up in the kidneys
   2. Stages:
      a. Initial (hours to days) – from acute insult to signs of injury
      b. Maintenance phase (1-2 weeks) – GFR continues to decrease and stabilize
      c. Recovery phase (several months to years) – tubular function and GFR restoration
   3. Treatment focuses on correction of underlying cause

- ✓ Monitoring serum electrolyte laboratory values
- ✓ Daily weighing
- ✓ Consultation with nephrologist before taking OTC drugs

B. Chronic Renal Failure –gradual progressive disorder characterized by an irreversible loss of renal function and reduction in the GFR
   1. Causes:
      a. DM and hypertension are common causes
   2. National Kidney Foundation Stages:
      a. Stage 1 – kidney damage (no symptoms)
      b. Stage 2 – mild (no or rare symptoms)

c. Stage 3 – moderate (clinical and laboratory signs)
d. Stage 4 – severe (prominent signs)
e. Stage 5 – kidney failure (uremic syndrome)

3. Treatment focuses on slowing the progression of the disease and managing symptoms
   a. Dialysis
      - Continuous Renal Replacement Therapy (CRRT) – refers to a variety of techniques used to provide extracorporeal fluid or solute removal on a continuous basis
      - Intermittent Hemodialysis (IHD) – also known as traditional hemodialysis; accomplished using a machine to pump blood from the patient to a dialyzer filter
      - Continuous Ambulatory Peritoneal Dialysis (CAPD) – patient's peritoneum serves as the semi-permeable membrane
   b. Renal Transplant

TERMINOLOGIES

Acute Renal Failure – sudden loss of the ability of kidneys to eliminate excess salts, fluids, and waste materials from the blood; a very serious condition and requires immediate treatment

Chronic Renal Failure – a gradual loss of kidney function over time; progressive and irreversible

FURTHER READINGS

Emergency Nurses Association. (2019). *Sheehy's Manual of Emergency Care, 7th ed*. St. Louis: Elsevier Mosby. pp 504-593

Krishnan, M.and Thiry, K. (2019 February). Innovation in dialysis: Continuous improvement and implementation, NEJM Catalyst: Innovations in Care Delivery. Retrieved from https://catalyst.nejm.org/doi/abs/10.1056/CAT.19.0007

UNIT TASKS

Short Case Analysis: Read the scenario below and answer the questions that follow in 5-10 sentences only. Do not forget to cite your reference(s) to support/justify your answers.

The nurse is caring for Mr. Bean, 5' tall weighing 100lbs. At the end of the 8-hour shift, the nurse emptied Mr. Bean's indwelling catheter bag. It has 190mL of amber-colored urine.
What will the nurse do as a PRIORITY independent intervention? Why? (Hint: Compute first for the expected UO of the client)

REFERENCES

Burns, S. and Delgado, S. (2019). Essentials of Critical Care Nursing, 4th ed. USA: McGraw-Hill.

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