ATI Real Life Student Packet
N202 Advanced Concepts of Nursing
2024

Student Name: _____Catharine Cardellino_____

ATI Scenario: ____CKD_____

To Be Completed Before the Simulation

*****Blue boxes should be completed using textbook information. What do you expect to find? This information should be collected before you start the ATI simulation*

Medical Diagnosis: _Chronic Kidney Disease____

NCLEX IV *(8)*: Physiological Integrity/Physiological Adaptation

Anatomy and Physiology
Normal Structures

Upper urinary system: 2 kidneys, 2 ureters
Lower urinary system: urinary bladder, urethra.

Urine formed in kidneys, drains through ureters, stored in bladder, passes through urethra.

Kidneys: regulate the volume/composition of extracellular fluid and excrete waste products from the body, control BP, make erythropoietin, activate vitamin D, regulate acid base balance. Each is surrounded by fat + connective tissue that cushions and supports. Capsule covers each, acts as shock absorber. Hilus: entry site for renal artery and nerves, exit site for renal vein + ureter. Parenchyma is tissue of the kidney. Urine passes papillae → calyces → renal pelvis (stores 3-5ml urine). Nephron = functional unit, each kidney has around 1 million, all composed of flomerulus, bowmans capsule, tubular system → consists of proximal convoluted tubule, loop of henle, distal convoluted tubule, collecting tubules. Several collecting tubules form a single collecting duct → merge into pyramid that empties via the papilla into minor calyx.

Blood flow to kidneys (1200 ml/min) is 20-25% cardiac output. Blood reaches kidneys via renal artery which arises from aorta and enters the kidney through the hilus. Renal artery → secondary branches → smaller → afferent arteriole → capillary network → glomerulus (50 capillaries) then unite in efferent arteriole → capillary network → peritubular capillaries

NCLEX IV *(7)*: Reduction of Risk

Pathophysiology of Disease

Progressive, irreversible loss of kidney function. CKD is defined as either the presence of of kidney damage or a decreased GFR less than 60 ml/min/1.73 m^2 for longer than 3 months.
Stage 1: kidney damage with normal or increased GFR, ≥ 90
Stage 2: Kidney damage with mild decreased GFR, 60-89
Stage 3a: Moderate decrease GFR, 45-59
Stage 3b: Moderate decreased GFR, 30-44
Stage 4: Severe decreased GFR, 15-29
Stage 5: Kidney failure, <15 (or dialysis),

As kidney function deteriorates, all body systems are impacted as a result from retained urea, creatinine, phenols, hormones, electrolytes,, and water. Uremia is a syndrome in which these body symptoms develop in multiple body systems.

Urinary system: Early stages, usually no change in UO, polyuria may be present w diabetes. As CKD progresses, pts may have increasing difficulty with fluid retention and requires diuretic therapy.

Metabolic disturbance:
-waste product accumulation: as the GFR decreases the BUN + serum creatinine will increase due to kidney disease, protein intake, fever, corticosteroids, and catabolism. Significant BUN increases contribute to nausea, vomiting, lethargy, fatigue, impaired thought process, headaches.
-Altered carbohydrate metabolism: impaired glucose metabolism resulting from cellular

drain into the venous system → renal vein empties into IVC.

Glomerular function: urine formation at glomerulus where blood is filtered. Glomerulus = semipermeable membrane that allows filtration. Hydrostatic pressure of the blood to be filtered into the Bowman's capsule. There the filtered portion of the blood begins to pass down the tubule. Amount of blood filtered each minute by the glomeruli is expressed as the glomerular filtration rate (GFR) at about 125 ml/min. The peritubular capillary network reabsorbs most of the glomerular filtrate before it reaches the end of the collecting duct → 1 ml/min is excreted as urine.

Tubular function: tubules and collecting ducts are responsible for reabsorption of essential materials and excretion of nonessential ones. In the proximal convoluted tubule, 80% of electrolytes are reabsorbed including glucose, amino acids, small proteins. Reabsorption continues in loop of Henle, water is conserved to concentrate the filtrate. 25% of filtered sodium is reabsorbed in the ascending limb. Distal convoluted tubules are responsible for final regulation of water balance and acid-base balance. Antidiuretic hormone is needed for water reabsorption in the kidney and is important in water balance. ADH makes tubules and ducts permeable to water. Water is then reabsorbed into the peritubular capillaries and eventually returned to the circulation. Aldosterone acts on the distal tubule to cause reabsorption of Na+ and water. In exchange for sodium, potassium ions are excreted.

insensitivity to the normal action of insulin, causes defective carbohydrate metabolism. Mild to moderate hyperglycemia and hyperinsulinemia may ovvur. Insulin and glucose metabolism may improve w dialysis. Insulin (which depends on the kidneys for excretion) stays in the system longer.
-Elevated triglycerides: hyperinsulinemia → hepatic production of triglycerides → dyslipidemia, increased VLDLs, LDLs, decreased HDLs, this all results from altered lipid metabolism from decreased levels of lipase.

<u>Electrolyte and Acid-Base Imbalances:</u>
-Potassium: Hyperkalemia occurs, may lead to fatal dysrhythmias (levels 7-8 usually). Results from decreased excretion of potassium by the kidneys, breakdown of cellular protein, `bleeding, metabolic acidosis.
-Sodium: impaired excretion → retention with water, large quantities of water retained → dilutional hyponatremia. Sodium retention → edema, htn, HF. Restrict sodium intake to 2 g/day. Levels range from low, normal, to high.
-Calcium +phosphate: musculoskeletal impacts
-Magnesium: Primarily excreted by the kidneys, hypermagnesemia rare but → absent reflexes, decrease mental status, dysrhythmias, hypotension, resp failure
-Metabolic acidosis: Kidneys impaired ability to excrete excess acid and the defective reabsorption/regeneration of HCO3-. Avg adult makes 80-90meq/day. In kidney disease, HCO3- measures: 16-20mEq/L. Decreased levels indicate buffering metabolic acids.

<u>Hematologic:</u>
-Anemia: due to decreased production of erythropoietin by the kidneys which normally stimulates precursor cells in the bone marrow to make RBCs. Other factors include nutritional deficiencies, decreased RBC lifespan, increased hemolysis of RBCs, frequent blood sampling, GI bleeding.
-Bleeding tendencies: most common cause is qualitive defect in platelet function, caused by impaired platelet aggregation + impaired released of platelet factor III. Changes in coagulation due to increased concentrations of both factor VIII and fibrinogen.
-Infection: increased susceptibility due to changes in WBC function and altered immune response/function.

		Cardiovascular System: most common cause of death is CVD* (Myocardial infarction, ischemic heart disease, peripheral artery disease, HF, cardiomyopathy, stroke). May be related to vascular calcification and arterial stiffness from calcium deposits in the vascular medial system. 1) Vascular smooth muscles changing into chondrocytes/osteoblast like cells. 2) high total body amount of calcium and phosphate resulting from abnormal bone metabolism. 3) impaired renal excretion. 4) drug therapies to treat bone disease Htn: cause and consequence, worsened by sodium retention and increased ECF volume. **Respiratory system:** may compensate with Kussmaul breathing from increased CO2 removal by exhalation. Dyspnea due to fluid overload, pulm edema, uremic pleuritis, pleural effusions, resp infections. **Gastrointestinal:** Stomatitis with exudates, ulcerations, metallic taste in mouth, uremic factor, anorexia, nausea, vomiting may develop if CKD → ESRD. **Neurologic system:** Result of increased nitrogenous waste products, electrolyte imbalances, metabolic acidosis, atrophy, demyelination of nerve fibers. CNS becomes depressed → lethargy, apathy, decreased ability to concentrate, fatigue, irritability, altered mental ability. Increased BUN and htn encephalopathy → seizures and coma. Peripheral neuropathy first shows as slowing nerve conduction in extremities, paresthesia → bilateral foot drop, weakness, atrophy, loss of deep tendon reflexes, muscle twitching. Dialysis should improve CNS manifestations. **Musculoskeletal system:** CKD mineral and bone disorder develops of systemic disorder of mineral/bone metabolism caused by deterioration in kidney function. Less vit. D is converted to its active form, resulting in decreased calcium. Hypocalcemia → parathyroid gland releases PTH, which stimulates bone demineralization. Hyperphosphatemia occurs. All of this leads to more PTH release → rapid bone remodeling → fracture risk. **Integumentary:** refractory pruritus, uremic frost. Occurring from calcium phosphate deposition.

		Reproductive system: infertility, decreased libido. **Psychologic changes:** Personality + behavioral changes, emotional lability, withdrawal, depression occur in pts w CKD.

To Be Completed Before the Simulation

Anticipated Patient Problem: Excess Fluid Volume

Goal 1: Patient will remain free of edema and maintain clear lung sounds, no dyspnea, during my time of care

Relevant Assessments (Prework) What assessments pertain to your patient's problem? Include timeframes	**Multidisciplinary Team Intervention** (Prework) What will you do if your assessment is abnormal?
Assess lung sounds at beginning of shift during head to toe, if abnormal then reassess an hour after interventions as well	Administer diuretics as ordered by the provider
Assess and monitor patients intake and output every hour	Insert foley catheter as ordered for strict input/output
Monitor weight every morning with same clothes	Prepare patient for dialysis if indicated
Assess knowledge of fluid intake deficit	Restrict fluids as ordered
Assess extremities for edema at beginning of shift during head to toe and as needed, if abnormal after every intervention	Elevate extremities and encourage position changes q2 hours
Assess for JVD at beginning of shift and during every interaction with the patient	Maintain, enforce, and educate on sodium restriction as needed and throughout my time of care

Goal 2: Patient will abide by fluid intake restrictions during my time of care

To Be Completed Before the Simulation

Anticipated Patient Problem: Electrolyte Imbalance

Goal 1: Will maintain normal potassium levels as evidenced by laboratory work and no concerns on ECG during my time of care

Goal 2: Will demonstrate understanding of specific dietary restrictions during my time of care

Relevant Assessments (Prework) What assessments pertain to your patient's problem? Include timeframes	**Multidisciplinary Team Intervention** (Prework) What will you do if your assessment is abnormal?
Assess labs as soon as they are uploaded to the EMR for any concerning values regarding potassium, sodium, calcium, magnesium, and phosphorus	Administer potassium binders as ordered
Assess vital signs at beginning of shift, when reassessing after interventions and q4 hours	Implement seizure precautions at the beginning of the shift
Assess EKG continuously	Apply and maintain telemetry
Assess knowledge of dietary restrictions	Maintain and provide education on protein restriction
Assess for weakness during head to toe and upon every interaction	Administer phosphate binders as ordered
Assess skin for pruritus or any wounds during head to toe and prn	Apply lotion to affected areas

To Be Completed During the Simulation:

Actual Patient Problem: Hypervolemia, excess fluid volume

Clinical Reasoning: Loss of renal function causes reduced excretion of fluid and sodium
Goal: Will remain free of edema and maintain clear lung sounds during my time of care Unmet
Goal: Will have a urinary output of 30 ml/hr during my time of care Met

Actual Patient Problem: **Risk for electrolyte imbalance**

Clinical Reasoning: Decreased renal function and excess fluid in the body leads to a buildup of various electrolytes.
Goal: Will achieve a potassium levels (3.5-5) WNL during my time of care Met
Goal: Will demonstrate understanding of dietary restrictions during my time of care Met

Additional Patient Problems:

Deficient knowledge

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

Patient Problem	Time	Relevant Assessments	Time	Multidisciplinary Team Intervention	Time	Reassessment/ Evaluation
1	2/10 1700	AS has stage V kidney failure and has been receiving peritoneal dialysis at home for nine months, reports gaining weight 13.2 kg over last two days, VS T 37.2, HR 110, RR 22 w 95% SpO2 RA, 170/92 BP, AV fistula intact on L forearm bruit and thrill noted, +2 pitting edema bilateral lower extremities, Hgb 10.2, Hct 32%, RBC 3.1, CXR reveals bilateral pulmonary venous congestion w infiltrates, complains of	1710	Raises HOB 40 degrees	1830	Reports feeling more comfortable with HOB raised, scattered rhonchi on auscultation, VS T 37.2, HR 118, RR 24, SpO2 94% RA, 72.1 kg, UO 150 ml

		tightness in legs and shortness of breath				
2	2/10 1700	K 6.0, Na 132, Chloride 100, BUN 42, creatine 8, protein 6.1, albumin 3.2, glucose 174, calcium 8, phosphorus 7.5, AST 25 units,	1710	Applied cardiac monitor and provided education as to why, applied limb alert bracelet, and inserted 20 g IV into R forearm,	1800	Telemetry indicates peaked T waves
1,2	1940	VS T 37.0, HR 116, RR 22, BP 170/90, SpO2 96% on 2L NC,	1940	Administered Furosemide 80 mg IV push	2100	160 ml urine output, BP 178/88, HR 114, RR 18
3	2100	AS expresses confusion and concerns about hemodialysis	2110	Provided education on hemodialysis process and provided education material/resources	2110	AS understands education, as demonstrated by verbalizing that she may experience hypotension
2	2045	K 5.9, BUN 42, creatinine 8, phosphorus 7.4, glucose 166, BP 170/84	2100	Notified provider of BP trend	2/11 0800	AS reports being able to sleep, but had frequent BP measurements
2	2/11 0800	Bruit auscultated at AV fistula site, 72.6 kg	0900	Receives dialysis	1200	Reports that it was “not as bad” as she thought it would be, reports not feeling hungry and requesting rest, 71.5 kg, intake 120 ml, emesis 5 ml. K 4.7, calcium 9, phosphorus 5.5, sodium 136, magnesium 2
1,2	1210	Reports feeling cold and having chills, pain 2/10, BP 134/76, HR 88, 97% on RA, urine output 130 ml	1215	Provided blanket	1220	Found crying sitting in chair
3	1220	Reports feeling overwhelmed and upset about dialysis	1220	Provided therapeutic communication and options to make dialysis more tolerable, contacted	1230	Verbalizes yes to receiving more education, reports that case mgmt said a van has been arranged to pick

				case mgmt		AS up for dialysis
3	2/15 0900	Has been discharged and is receiving home health, Reports she is concerned about peritoneal catheter, no cracks noted, skin dry and intact, no edema or drainage, assessed diet and she expresses she doesn't quite understand what she can eat,	0900	Provided education on peritoneal site, education on diet restrictions	0910	Agrees to try to make changes
3	0940	Expresses concerns with sharing foods at potluck	1000	Assist with planning	1010	Able to identify appropriate foods

To Be Completed After the Simulation

The orange boxes should be filled out with your simulation patient's actual results, assessments, medications, and recommendations

NCLEX IV *(7)*: Reduction of Risk

Actual Labs/ Diagnostics

Basic metabolic panel- K began at 6.0 and trended down to 4.7, Sodium 132 → 136, Calcium 8 → 9, Phosphorus 7.5 → 5.5
Complete blood count- Hgb 10.2 → 10, Hct 32% → 30, RBC 3.1→ 3.1
ECG: sinus tachycardia, elevated T waves when K was elevated
CXR: bilateral pulmonary venous congestion

NCLEX II *(3)*: Health Promotion and Maintenance

Signs and Symptoms

Bilateral pitting edema
Dyspnea, fluid in lungs
HTN
Tachycardia, abnormal rhythm
Loss of appetite
Weight gain (fluid)
Electrolyte imbalance
Nausea/vomiting
Uremic pruritus

NCLEX II *(3)*: Health Promotion and Maintenance

Contributing Risk Factors

Type 2 diabetes mellitus
HTN
Age
Hyperlipidemia
Hispanic

Therapeutic Procedures

Non-surgical
Dietary changes
Supplemental O2

Surgical

AV fistula for dialysis
Catheter for peritoneal dialysis

NCLEX IV *(7)*: Reduction of Risk

Prevention of Complications
(Any complications associated with the client's disease process? If not what are some complications you anticipate)

Attending dialysis as ordered
Adhering to dietary restrictions (ie limiting potassium, sodium, protein)
Adhering to fluid restriction

NCLEX IV *(6)*: Pharmacological and Parenteral Therapies

Medication Management

Furosemide
Ferric citrate
Sevelamer carbonate
Docusate sodium
Tacrolimus
Epoetin

NCLEX IV *(5)*: Basic Care and Comfort

Non-Pharmacologic Care Measures

Proper education
Nutrition changes
Fluid restriction

NCLEX III *(4)*: Psychosocial/Holistic Care Needs

Stressors the client experienced?

Lack of family support
Changing from peritoneal dialysis to hemodialysis
Changes in diet

Client/Family Education

Document 3 teaching topics specific for this client.

- Diet changes
- Hemodialysis
- Importance of support

NCLEX I *(1)*: Safe and Effective Care Environment

Multidisciplinary Team Involvement
(Which other disciplines were involved in caring for this client?)

Home health team
Dialysis team
Nutrition

Patient Resources

Transportation to dialysis
Home health

Reflection Questions

Directions: Write reflection including the following:

1. What was your biggest “take away” from participating in the care of this client?
   _____Biggest take away is the importance of resources and a multidisciplinary team. Since the patient was widowed and didn’t have children, the ability to get to and from dialysis was presented as a potential struggle. Transportation being provided for her helped to bridge that barrier to care. _____

2. What was something that surprised you in the care of this patient?
   _____I think her being alert and oriented as well as she was surprised me because when I took care of someone with CKD in the hospital as a first year, she was not oriented to time or situation. So I was surprised when most of the care was solely physical, though there were some psychological implications as well but just not as severe as I had anticipated._____

3. What is something you would do differently with the care of this client?
   _____I don’t think I would do anything differently. I would say the patient was taken care of very holistically. The first RN in the scenario demonstrated awareness of labs and dialysis, he attended to the physical attributes of the disease process. The second RN was there for AS mentally when she addressed her negative feelings. The third RN addressed the patients spiritual/social concerns when it came to connecting with her community at the church. I appreciate that this scenario addressed the mind, body, and spirit of the patient. _____

4. How will this simulation experience impact your nursing practice?
   _____Something I try to be mindful of as an aspiring psych nurse is the mind-body connection. Kidney disease is one of the main medical surgical diagnoses that has remained prominent in my mind when it comes to tending to patients with cooccurring mental and physical illnesses due to the uremic effects on the brain. Throughout my practice I will continue to always try to bridge the mental and physical connections of health to maintain a well-rounded, holistic practice and avoid getting caught up in solely the mental side of things. _____