GENERAL

hesi case study chronic renal failure

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HESI Case Study: Chronic Renal Failure – A Comprehensive Guide

Preparing for the HESI exam can feel daunting, especially when you encounter complex case studies that require a deep understanding of pathophysiology, nursing assessment, and patient education. One common scenario is a patient with chronic renal failure (CRF). This article provides a thorough, step by step analysis of a typical HESI case study focused on chronic renal failure. By the end, you'll know how to identify key assessment findings, develop a nursing care plan, and anticipate exam questions—all while staying within SEO best practices for readability and relevance.

Understanding Chronic Renal Failure

What is Chronic Renal Failure?

Chronic renal failure, also known as chronic kidney disease (CKD), is the gradual loss of kidney function over months or years. It is staged from 1 to 5 based on the estimated glomerular filtration rate (eGFR) and albuminuria levels. Stage 5—end stage renal disease (ESRD)—requires dialysis or transplantation.

Common Causes

- Diabetes mellitus
- Hypertension
- Glomerulonephritis
- Polycystic kidney disease
- Long term use of nephrotoxic drugs

Pathophysiology Overview

Kidneys filter waste, maintain fluid and electrolyte balance, and produce hormones. In CKD, damage to glomeruli and tubules leads to:

- Reduced filtration (lower eGFR)
- Retention of nitrogenous waste (urea, creatinine)
- Imbalance of sodium, potassium, calcium, phosphate, and bicarbonate
- Altered hormone production (e.g., erythropoietin, renin, vitamin D)

These changes manifest as fatigue, edema, hypertension, anemia, metabolic acidosis, and bone disease.

The HESI Case Study Scenario

Patient Profile

John Doe, a 58 year old male with a 15 year history of type 2 diabetes and hypertension, presents for a routine follow up. He reports increased fatigue, swelling in his lower extremities, and occasional shortness of breath. His last labs show:

- Serum creatinine: 3.2 mg/dL (baseline 1.1 mg/dL)
- eGFR: 28 mL/min/1.73 m² (Stage 3b CKD)
- Serum potassium: 5.8 mEq/L

- Serum phosphate: 5.2 mg/dL
- Serum bicarbonate: 18 mEq/L
- Hemoglobin: 9.5 g/dL

Clinical Findings

On examination:

- Blood pressure: 160/95 mmHg
- Heart rate: 88 bpm
- Peripheral edema: pitting, 2+ in both ankles
- Jugular venous distension: mild
- Skin: dry, itchy, with mild hyperpigmentation

Assessment: Key Nursing Findings

Vital Signs & Hemodynamics

Hypertension and tachycardia suggest volume overload and increased renin angiotensin activity. Monitoring **daily weight** and **daily blood pressure** is essential for tracking fluid status.

Fluid & Electrolyte Imbalance

- Hyperkalemia (K z 5.8 mEq/L) increases arrhythmia risk.
- Metabolic acidosis (HCO *ƒ* { 18 mEq/L) can worsen bone disease.
- Hyperphosphatemia (5.2 mg/dL) contributes to vascular calcification.

Renal Related Symptoms

Edema, fatigue, and anemia (Hb 9.5 g/dL) are classic manifestations. Anemia in CKD is often due to reduced erythropoietin production.

Psychosocial Factors

John expresses anxiety about potential dialysis and feels overwhelmed by medication changes. He also reports limited understanding of dietary restrictions.

Developing the Nursing Care Plan

Primary Nursing Diagnosis

Fluid volume excess related to decreased glomerular filtration rate and inadequate sodium excretion as evidenced by pitting edema and weight gain.

Secondary Nursing Diagnoses

- Imbalanced electrolyte level (potassium) related to decreased renal excretion.
- Anemia related to decreased erythropoietin production.
- Knowledge deficit regarding dietary restrictions.
- Anxiety related to impending treatment changes.

Goals & Outcomes

1. Maintain serum potassium
2. Reduce peripheral edema by 1+ within 7 days.
3. Increase hemoglobin to 10.5 g/dL within 4 weeks.
4. Patient demonstrates proper low potassium diet and medication adherence.

5. Patient reports decreased anxiety about dialysis options.

Interventions & Rationales

- Daily weight monitoring: Detects fluid shifts early.
- Limit sodium to Reduces fluid retention.
- Encourage moderate exercise to promote peripheral circulation.
- Administer diuretics (e.g., furosemide) per physician order; monitor urine output.
- Administer potassium binding resins (e.g., sodium polystyrene sulfonate) as prescribed.
- Provide dietary counseling on low potassium foods (avoid bananas, oranges, potatoes).
- Use potassium free solutions for IV fluids.
- Monitor serum potassium every 6–12 hours until stable.
- Administer oral bicarbonate supplements as prescribed.
- Encourage protein restricted diet to reduce acid load.
- Monitor serum bicarbonate levels twice weekly.
- Administer erythropoiesis stimulating agents (ESAs) per protocol.
- Provide iron supplementation if ferritin
- Encourage adequate protein intake (0.8 g/kg/day).
- Schedule follow up labs to assess hemoglobin response.
- Explain the importance of dietary restrictions (low sodium, low potassium, low phosphate). Provide a handout with sample meal plans.
- Discuss medication adherence and potential side effects.
- Introduce dialysis options (hemodialysis, peritoneal dialysis) and explain when each is considered.
- Offer psychological support and resources for coping with chronic illness.
- Document all vital signs, weights, and laboratory values in the chart.
- Record patient responses to education and interventions.
- Communicate with the interdisciplinary team (nephrologist, dietitian, social worker).

Anticipating HESI Exam Questions

HESI exam questions often test your ability to synthesize patient data, identify priority issues, and select evidence based interventions. Here are sample question formats and how to answer them.

Multiple Choice Example

Question: *John's serum potassium is 5.8 mEq/L. Which of the following interventions is the most appropriate priority?*

1. Administer oral potassium binding resin.
2. Encourage a low potassium diet.
3. Order a potassium level in 24 hours.
4. Start intravenous fluids with normal saline.

Answer: **Option 1**– Immediate potassium reduction is critical to prevent cardiac arrhythmias. Diet changes and monitoring are important but secondary.

Case Based Scenario

Scenario: A 62 year old woman with stage 4 CKD presents with worsening edema, weight gain, and serum creatinine 4.5 mg/dL. She is on lisinopril, furosemide, and iron supplement. What is the best next step?

Key points: Evaluate for fluid overload, assess medication adherence, consider nephrology referral. The most appropriate next step is to **increase furosemide dose and monitor daily weight** while scheduling a nephrology consult.

Short Answer Prompt

Describe two dietary restrictions that are essential for a patient with chronic renal failure and explain why.

Answer: **Low sodium ("d2 g/day)** prevent fluid retention and hypertension; **low potassium ("d2–3 g/day)** avoid hyperkalemia and potential arrhythmias. Both restrictions help maintain fluid, electrolyte, and blood pressure stability.

Integrating Evidence Based Practice

Evidence supports the use of **low phosphate diets** and **phosphate binders** to reduce vascular calcification. Studies also show that **early initiation of dialysis** in select patients improves quality of life. When preparing for the HESI exam, review current clinical guidelines from the National Kidney Foundation and KDIGO.

Key Guidelines to Remember

- eGFR
- Serum potassium >5.5 mEq/L: Initiate potassium lowering therapy.
- Serum bicarbonate
- Hemoglobin

Conclusion

Mastering a HESI case study on chronic renal failure requires a systematic approach: analyze patient data, identify priority nursing diagnoses, set measurable goals, and implement evidence based interventions. By understanding the underlying pathophysiology and applying clinical guidelines, you'll be able to answer exam questions confidently and, more importantly, provide high quality care to patients with CKD. Use this comprehensive framework to guide your study sessions, and you'll find yourself well prepared for the HESI exam and real world nursing practice alike.

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