Montigue Longacre, a 51-year-old African-American male, has end-stage renal failure. He arrives at the emergency clinic complaining of shortness of breath on exertion and extreme weakness.

**ASSESSMENT**

Mr. Longacre tells the nurse, Janet Allen, RN, that he normally receives dialysis three times a week. He missed his last treatment, however, to attend his father’s funeral. During the last several days, he has eaten a number of fresh oranges he received as a gift. Physical assessment findings include T 99.2, P 100, R 28, BP 168/96, 2+ pre-tibial edema, and a 6-lb (3.6-kg) weight gain since his last hemodialysis treatment 4 days ago. Laboratory and diagnostic tests show the following abnormal results.

- K⁺ 6.5 mEq/L (normal 3.5 to 5 mEq/L)
- BUN 118 mg/dL (normal 7 to 18 mg/dL)
- Creatinine 14 mg/dL (normal 0.7 to 1.3 mg/dL)
- HCO₃⁻ 17 mEq/L (normal 22 to 26 mEq/L)
- Peaked T wave noted on ECG.

Mr. Longacre is placed on continuous ECG monitoring, and the physician prescribes hemodialysis. As an interim measure to lower the serum potassium, the physician prescribes D₅₀W (25 g of dextrose), one ampule, to be administered intravenously with 10 units of regular insulin over 30 minutes.

**DIAGNOSES**

- Activity Intolerance related to skeletal muscle weakness
- Risk for Decreased Cardiac Output related to hyperkalemia
- Risk for Ineffective Health Maintenance related to inadequate knowledge of recommended diet
- Excess Fluid Volume related to renal failure

**EXPECTED OUTCOMES**

- Gradually resume usual physical activities.
- Maintain serum potassium level within normal range.
- Closely monitor the response to intravenous calcium gluconate, particularly in clients taking digitalis. Calcium increases the risk of digitalis toxicity.

**Risk for Activity Intolerance**

Both hypokalemia (low serum potassium levels) and hyperkalemia (high serum potassium levels) affect neuromuscular activity and the function of cardiac, smooth, and skeletal muscles. Hyperkalemia can cause muscle weakness and even paralysis.

- Monitor skeletal muscle strength and tone. Increasing weakness, muscle paralysis, or progression of affected muscles to affect the upper extremities or trunk can indicate increasing serum potassium levels.
- Monitor respiratory rate and depth. Regularly assess lung sounds. Muscle weakness due to hyperkalemia can impair ventilation. In addition, medications such as sodium bicarbonate or sodium polystyrene sulfonate can cause fluid retention and pulmonary edema in clients with preexisting cardiovascular disease.

- Assist with self-care activities as needed. Increasing muscle weakness can lead to fatigue and affect the ability to meet self-care needs.

**Risk for Imbalanced Fluid Volume**

Renal failure is a major cause of hyperkalemia. Clients with renal failure also are at risk for fluid retention and other electrolyte imbalances.

- Closely monitor serum potassium, BUN, and serum creatinine. Notify the physician if serum potassium level is greater than 5 mEq/L, or if serum creatinine and BUN levels are increasing. Serum creatinine and BUN are the primary indicators of renal function. Levels of these substances rise rapidly in acute renal failure, more slowly in chronic renal failure (see Chapter 29).
- Maintain accurate intake and output records. Report an imbalance of 24-hour totals and/or urine output less than 30 mL/hour. Oliguria (scant urine) or anuria (no urine output) may indicate renal failure and an increased risk for hyperkalemia and fluid volume excess.

**NURSING CARE PLAN A Client with Hyperkalemia**

Verbalize causes of hyperkalemia, the importance of hemodialysis treatments as scheduled, and the role of diet in preventing hyperkalemia.

**PLANNING AND IMPLEMENTATION**

- Monitor intake and output.
- Monitor serum potassium and ECG closely during treatment.
- Teach causes of hyperkalemia and the relationship between hemodialysis and hyperkalemia.
- Discuss the importance of avoiding foods high in potassium to prevent or control hyperkalemia.

**EVALUATION**

Following emergency treatment and hemodialysis, Mr. Longacre’s ECG and serum potassium level have returned to normal. His muscle strength has returned to near normal, and he verbalizes an understanding of his prescribed hemodialysis regimen. Janet Allen provides verbal and written information about hyperkalemia, the importance of complying with the hemodialysis regimen, and the importance of limiting intake of dietary sources of potassium in renal failure. She also furnishes a list of foods high in potassium and cautions against using potassium-containing salt substitutes and nonprescription drugs.

**CRITICAL THINKING IN THE NURSING PROCESS**

1. What information given by Mr. Longacre indicated that he might be experiencing hyperkalemia?
2. Why was continuous ECG monitoring instituted as an emergency measure?
3. What additional emergency measures might have been instituted if Mr. Longacre’s serum potassium level had been 8.5 mEq/L and his ECG had showed changes in impulse conduction?
4. Develop a care plan for Mr. Longacre for the nursing diagnosis of Anxiety.

See Evaluating Your Response in Appendix C.