**CASE-Renal Failure**

**Chief Complaint**

“I feel really weak.”

**HPI**

Everit Mitchell is a 72-year-old man who presents to the ED with complaints of severe weakness that started this morning. He was feeling normal until last night when he felt more tired than usual and went to bed early. Since waking this morning, he has not had the energy to eat or perform his normal ADLs. His wife brought him to the ED because his physician is away on vacation.

**PMH**

HTN × 25 years

CHF × 8 years

PUD (recently diagnosed)

**FH**

Father died of an acute MI; mother was diabetic

**SH**

Retired and living at home with his wife. Before retirement, the patient was employed as an accountant. No alcohol, no tobacco use.

**Meds**

Furosemide 40 mg po once daily

Metoprolol succinate 50 mg po once daily

Enalapril 20 mg po once daily

Famotidine 20 mg po BID

**Allergies:** NKA

**Review Of Systems:** Patient complains of feeling cold but denies chills or fever. Nochanges in vision. Denies SOB, CP, and cough. Complains ofvertigo. Has been having frequent black diarrhea over the last 2days, but denies abdominal pain. Has noted a decrease in thefrequency of urination over the last 24 hours. Denies musculoskeletalpain or cramping.

**Physical Examination**

*Gen:* Pale, elderly Caucasian man who appears generally weak and lethargic

*VS:* BP 96/48 (82/37 on standing), P 105, RR 26, T 37.1°C; Wt 78 kg, Ht 5'9''

*Skin:* Pale and cold with poor turgor

*Neck/Lymph Nodes:* No JVD or HJR; no lymphadenopathy or thyromegaly

*Lungs:* No crackles or rhonchi

*CV:* Tachycardic with regular rhythm; normal S1, S2; no S3; faint S4; no MRG Murmur/rub/gallop

*Abd:* Soft, hyperactive BS

*Genit/Rect:* Stool heme (+); slightly enlarged prostate

*MS/Ext:* Weak pulses; no peripheral edema

**Lab:**

Na 139 mEq/L (135-145 mEq/L) Ca 8.6 mg/dL (8.6–10.3 mg/dL)

K 5.3 mEq/L (3.3–4.9 mEq/L) Mg 2.1 mg/dL (1.58–2.68 mg/dL)

Cl 103 mEq/L (97–110 mEq/L) Phos 4.3 mg/dL (2.5–4.5 mg/dL)

CO2 21 mEq/L (22–30 mEq/L) WBC 11.3 × 103/mm3(4–10 × 103/mm3)

BUN 48 mg/dL (8–25 mg/dL) Hgb 9.1 g/dL (13.8–17.2 g/dL)

SCr 1.8 mg/dL (0.7–1.3 mg/dL) Hct 27.3% (40.7–50.3%)

Glu 113 mg/dL (< 200 mg/dL) Plt 128 × 103/mm3 (140-440 ×103/μL)

**Questions:**

1. What are the goals of therapy in this case?
2. Write the etiology of acute kidney injury.
3. Write the stages of renal failure.
4. List the patient’s drug therapy problems as they relate to his acute kidney injury (AKI).What information indicates the presence or severity of hypovolemia and AKI in this patient?
5. What do you think may have caused the renal impairment?
6. What Pharmacotherapeutic alternatives have been studied for the treatment of AKI?
7. What clinical and laboratory parameters are necessary to evaluate the therapy for achievement of the desired therapeutic outcome and to detect or prevent adverse effects?
8. What information should be provided to the patient to help avoid future episodes of AKI?
9. Calculate Everit Mitchell renal function using both Cockcroft–Gault and the Modiﬁcation of Diet in Renal Disease (MDRD) equations.
10. By what mechanism can non-steroidal anti-inﬂammatory drugs (NSAIDs) cause renal impairment?
11. By what mechanism can ACE inhibitors cause renal impairment?
12. Describe the differences between erythropoietin and darbepoetin alpha
13. What concomitant therapy might require to treat his renal anemia?
14. What would you do if failed to respond to epoetin therapy?
15. How will you differentiate pre renal failure from post renal failure based on urine analysis?