You are working in the internal medicine clinic at Beebe. Today your first patient is 70-year-old J.M., a man who has been coming to the clinic for several years for management of coronary artery disease (CAD) and hypertension (HTN). A cardiac catheterization done a year ago showed 50% stenosis of the circumflex coronary artery. He has had episodes of dizziness for the past 6 months and orthostatic hypotension, shoulder discomfort, and decreased exercise tolerance for the past 2 months. On his last clinic visit 3 weeks ago, a chest x-ray (CXR) examination revealed cardiomegaly and a 12-lead electrocardiogram (ECG) showed sinus tachycardia with left bundle branch block. You review J.M.'s morning blood work and initial assessment.

Laboratory Results

Chemistry

Sodium	142 mEq/L (142 mmol/L)
Chloride	95 mEq/L (95 mmol/L)
Potassium	3.9 mEq/L (3.9 mmol/L)
Creatinine	0.8 mg/dL (70.7 mcmol/L)
Glucose	82 mg/dL (4.6 mmol/L)
BUN	19 mg/dL (6.8 mmol/L)

Complete Blood Count

WBC	5400/mm^3 (5.4 x 10^9/L)
Hgb	11.5 g/dL (115 g/L)
Hct	37%
Platelets	229,000/mm^3 (229 x 10^9/L)

Initial Assessment

J.M. reports increased fatigue and shortness of breath, especially with activity, and "waking up gasping for breath" at night, for the past 2 days.

Vital Signs

Temperature	97.9 ° F (36.1 ° C)
Blood pressure	142/83
Heart rate	105 beats/min
Respiratory rate	18 breaths/min

1. Highlight the lab results that cause you concern and explain why.

2. Knowing his history and seeing his condition this morning, what further questions are you going to ask J.M. and his daughter?

CASE STUDY PROGRESS

J.M. tells you he becomes exhausted and has shortness of breath climbing the stairs to his bedroom and must lie down and rest ("put my feet up") at least an hour twice a day. He has been sleeping on 2 pillows for the past 2 weeks. He has not salted his food since the provider told him not to because of his high blood pressure, but he admits having had ham and a small bag of salted peanuts 3 days ago. He states that he stopped smoking 10 years ago. He denies having palpitations but has had a constant, irritating, nonproductive cough lately.

3. You think it's likely that J.M. has heart failure (HF). From his history, what do you identify as probable causes for his HF?

4. For each potential assessment finding listed, specify whether it is associated with left-sided HF or right-sided HF.

Potential Assessment Finding	Left-Sided HF	Right-Sided HF
a. Weakness		
b. Jugular (neck) vein distention		
c. Dependent edema (legs and sacrum)		
d. Hacking cough, worse at night		
e. Enlarged liver and spleen		
f. Exertional dyspnea		
g. Distended abdomen		
h. Weight gain		
i. S_3/S_4 gallop		
j. Crackles and wheezes in lungs		

CASE STUDY PROGRESS

The provider confirms your suspicions and indicates that J.M. is experiencing symptoms of early left-sided heart failure. A two-dimensional (2D) echocardiogram is ordered. Medication orders are written.

Medication Orders

Enalapril 10 mg PO twice a day
Furosemide 20 mg PO every morning
Carvedilol 6.25 mg PO twice a day
Digoxin 0.5 mg PO now, then 0.125 mg PO daily
Potassium chloride 10-mEq tablet PO once a day

5. For each medication listed, identify its class and describe its purpose in treating HF.

Enalapril

Furosemide

Carvedilol

Digoxin

Potassium chloride

6. When you go to remove the medications from the RX Station, you see that carvedilol (Coreg ER) is stocked. Will you give it to J.M.? Explain.

7. As you remove the digoxin tablet from the automated medication dispensing machine, you note that the dose on the tablet label is 250 mcg. How many tablets would you give?

8. Based on the new medication orders, which blood test or tests will be monitored carefully? Explain your answer.

9. When you give J.M. his medications, he looks at the potassium tablet, wrinkles his nose, and tells you he "hates those horse pills." He tells you a friend of his said he could eat bananas instead. He says he would rather eat a banana every day than take one of those pills. How will you respond?

10. The echocardiogram shows that J.M.'s left ventricular ejection fraction (EF) is 49%. Explain what this test result means with regard to J.M.'s heart function.

CASE STUDY PROGRESS

This is J.M.'s first episode of significant HF. Before he leaves the clinic, you want to teach him about lifestyle modifications he can make and monitoring techniques he can use to prevent or minimize future problems.

11. List 5 suggestions you might make and the rationale for each.

12. You tell J.M. that the combination of high-sodium foods he had during the past several days might have contributed to his present episode of HF. He looks surprised. J.M. says, "But I didn't add any salt to them!" To what health care professional could J.M. be referred to help him understand how to prevent future crises? State your rationale.

13. After visiting with the cardiac dietitian, you review potential food choices with J.M. Which foods are high in sodium and must be avoided? *Select all that apply*.

a. Fresh fruits

b. Canned soups

c. Cheddar cheese

d. Processed meats

e. Whole wheat bread

f. Fat-free fruit yogurt

g. Canned vegetables

14. You also include teaching about digoxin toxicity. When teaching J.M. about the signs and symptoms of digoxin toxicity, which will be included? *Select all that apply*.

a. Diarrhea

b. Visual changes

c. Increased urine output

d. Loss of appetite or nausea

e. Dizziness when standing up

END