EVIDENCE-BASED APPROACHES: IMC Case on Heart Failure

Larry Money is a 55 year old white man who presents to the IMC to establish care. Over the last several months he is getting more and more short of breath with exertion. He used to work in construction, but had to quit 4 months ago because he just "couldn't keep up". He has also noted swelling in both of his legs up to his knees, and states he has put on about 20 pounds. At this point he can only make it up about one flight of steps without stopping to rest. He states he was admitted to another local hospital 3 years ago with chest pain, told he didn't have a heart attack, but was told his heart was "somewhat weak" and advised to follow-up. He had no symptoms at the time so he did not bother to follow-up. He sleeps comfortably on 3 pillows, and denies waking up gasping for air. He has no symptoms at rest or while bathing, dressing, or preparing his meals.

Mr. Money denies headaches, dizziness, sinus pain, sore throat, oral lesions, neck pain, chest pain, palpitations, coughing or wheezing. He does admit to dyspnea with exertion as described above. He has attempted his girlfriend's albuterol inhaler with no improvement of symptoms, and otherwise denies any history of lung disease (asthma, COPD, etc…). He denies abdominal pain, nausea, vomiting, diarrhea, and constipation (his bowels are "regular"). He doesn't have dysuria, hematuria, polyuria, polyphagia, polydipsia, myalgias, or arthralgias. He denies having any rashes. He states, "It's time I start feeling like myself again."

Past Medical Hx: "somewhat weak heart", "told pressure high", "doc, I've been very healthy otherwise"
Past Surgical Hx: Appendectomy at age 18
Allergies: NKDA
Social Hx: Quit tobacco 8 months ago (previous ½ ppd for 20 years); former heavy drinker (6 beers daily) – again quit 8 months ago when he started feeling poorly; remote marijuana, and experimented with cocaine in the '80's
Family Hx: Mother, alive, 78: Hypertension; Father, deceased, 68: died from "heart condition"; Brother, alive, 58: Hypertension
ROS: Negative except as listed in HPI above.

Vitals: Temp: 98F, HR: 90, BP: 160/94, RR: 14, SpO2: 94% RA, Ht: 72", Wt: 250 lbs., BMI: 34
General: AOx3, NAD, Nontoxic, Pleasant
HEENT: No scleral icterus, no conjunctival injection, TM's clear, oral mucosa moist, missing several teeth
Neck: Supple, no carotid bruits, prominent jugular veins when patient supine
CV: RRR without c/r/m/g, large point of maximal impulse, peripheral pulses palpable, 1-2+ pitting edema bilateral lower extremities
Thorax: Soft crackles at bilateral bases, otherwise clear with no wheeze or rhonchi, no prolonged expiration
Abdomen: Obese, soft, normal bowel sounds, NT/ND, no fluid wave, unable to appreciate hepatojugular reflex
Extremities: No calf tenderness, no skin discoloration, no warmth, no Homan's sign
Neuro: CN II-XII grossly intact, PERRL, EOMI

Records review: 1 ER visit in 2007 for repair of laceration on hand (no labs or studies otherwise)
Records (3 years ago) from outside hospital: Review of discharge summary shows patient presented with chest pain, was felt to be high risk so had left heart catheterization which revealed widely patent coronaries, no significant valvular disease, but "cardiomegaly with global cardiomyopathy" with an EF of

40%. Discharge summary states all labs at time including CBC, CMP, TSH, tox screen, and lipid panel were unremarkable. The patient was discharged on furosemide, ramipril, and metoprolol succinate and was to follow up for further testing (including echocardiogram). You discuss this with Mr. Money who states at that time the meds were too expensive and he felt fine, so he never got them.

Please utilize the following link to ACC/AHA 2013 Heart Failure guidelines to answer the following questions:

http://circ.ahajournals.org/content/early/2013/06/03/CIR.0b013e31829e8776.full.pdf

1. Heart Failure Stages (pg. 84)
    a. What are the four stages of heart failure?

    b. What are the recommended therapies for each stage?

    c. What stage does Mr Money fit in (at the time of previous hospitalization, and now)?

2. What are the cardinal manifestations of heart failure? (pg. 12)

3. What are the 3 ways patients with heart failure typically present to healthcare providers? (pg. 12)

4. What is the single most useful imaging test in evaluation of patients with heart failure? (pg. 33)
    a. What are the 3 fundamental questions to be addressed by this study?

    b. Should we order this test for Mr. Money now?

5. What laboratory, radiographic, and ECG tests should be included in the initial evaluation of patients with heart failure? (pgs. 29-32)

6. What tests are recommended to be done routinely in heart failure patients? How often should an ECHO be performed? (pg. 33)

7. Compile a list of test orders for Mr. Money.

You tell Mr. Money that you believe he has heart failure. He asks, "How much time do I have left Doc?"

8. True or False: Validated multivariable risk scores can be useful to estimate subsequent risk of mortality in ambulatory or hospitalized patients with heart failure. (pg. 27)

9. Please list selected multivariable risk scores to predict outcome in heart failure listed in the guidelines and utilize Seattle Heart Failure Model to calculate Mr. Money's anticipated 1 year and 5 year survival using the following – no current meds, EF 30%, sodium 130, total cholesterol 250, hemoglobin 12, lymphocytes 40%, uric acid 6 mg/dl. (pg. 28)

Mr. Money asks if you have any specific recommendations on education, diet, and exercise programs as well as medications for chronic pain; he has been taking ibuprofen several times a week.

10. True or False: Heart failure patients need to understand how to monitor their symptoms, weight fluctuations, restrict their sodium intake, take their medications as prescribed, and stay physically active. Education regarding these recommendations is necessary, albeit not always sufficient, to significantly improve outcomes. (pg. 43)

11. What dietary modifications should you recommend to Mr. Money?

12. Should physical activity be encouraged? In a clinically stable patient, how can cardiac rehabilitation be useful? (pgs. 45-46)

13. What 4 classes of drugs can adversely affect the clinical status of patients with current or prior symptoms of heart failure with reduced EF (HFrEF) and should be avoided or withdrawn in these patients whenever possible? (pg. 64)
    a. Should Mr. Money continue ibuprofen therapy for chronic pain?

14. Every patient with heart failure should have a clear, detailed and evidence based plan of care. What should that plan of care ensure achievement of? (pg. 106)

Mr. Money asks about medications, he states he currently can only afford to pay $20 per month on medications (he has no insurance and is not working).

15. When are the following medications/treatments indicated or recommended in patients with *reduced* left ventricular ejection fraction? (pgs. 66-67, 75-76)
    a. Diuretics

    b. ACE inhibitors

    c. Beta blockers (which specific agents are recommended as well)

    d. ARBs

    e. ICDs

    f. Cardiac resynchronization therapy

    g. Aldosterone antagonist

    h. Combination hydralazine / nitrates

    i. Digitalis

16. Please use the 2016 HF Guidelines update to answer the following:

http://circ.ahajournals.org/content/early/2016/05/18/CIR.0000000000000435.full.pdf+html

    a. What is an ARNI? (pg. 8)

    b. When is an ARNI considered to replace an ACE or ARB? (pg. 10)

    c. What is ivabradine and when is it indicated in heart failure treatment? (pg. 11)

Devise a treatment regimen for Mr. Money, assuming the labs you ordered showed normal renal function and electrolytes. Mr. Money asks what to expect if he does nothing. "What is the worst thing this "heart failure" could progress to anyways, what can make this worse, and if I get real short of breath and go to the hospital what can I expect?"

17. What are the clinical symptoms or signs of a patient with refractory end stage heart failure?

18. What should a physician confirm before a patient is considered to have refractory heart failure? (pg. 77-78; Review table 25 on page 78-79 to review INTERMACS profiles)

19. What are common factors that precipitate hospitalizations for heart failure? (pg. 87)

20. Should you utilize intravenous or oral diuretics on the patient being admitted? How should diuretic dose be titrated? What labs should be followed? (pg. 88-89)

21. Should you continue the patients ACE and B-blocker therapy? If the patient was not already on a beta blocker, should it be started in the hospital, if so when? (pg. 88)

22. What should be addressed with the patient prior to discharge (and every heart failure patient we have clinical contact with)? (pgs. 88, 94)

23. What is the readmission rate at 6 months and mortality rate at 12 months following index hospitalization for heart failure? (pg. 85)

Please use the 2017 HF Guidelines update to answer the following:

https://www.ahajournals.org/doi/pdf/10.1161/CIR.0000000000000509

If our patient had heart failure with normal left ventricular ejection fraction, what would be the major treatment recommendations? (pgs. 68-70)

Case by Rex Wilford. Updated by Emily George 11/12/2018