

NATIONAL CASE

2016 ASHP CLINICAL SKILLS COMPETITION
PHARMACIST'S PATIENT DATA BASE FORM

Demographic and Administrative Information

Name: Steven B. Perry	Patient ID: 002415
	Room & Bed: 2301 Unit 2 South
Date of Birth: 02/24/1981	Physician: Hooper/Dice
Height: 71 in. / Weight: 165 lbs. / Race: Caucasian	Pharmacy: CVS
Prescription Coverage	Religion: None
Insurance: Blue Cross/Blue Shield	
Copay: \$10 generic; \$50 brand	
Cost per month: \$300	
Family's Annual Income: \$45,000	

Chief Complaint: "I have a fever, my belly hurts, and I am having a harder time breathing"

History of Present Illness: SP arrives in the emergency department at 23:30 on the evening of December 2nd after his wife called 911 since he wasn't answering questions appropriately at home. SP complains of progressive shortness of breath, his head feeling hot, and abdominal pain that has progressively worsened over the last 2 days. He used his albuterol inhaler twice with no improvement in symptoms. Last evening he wouldn't get out of bed secondary to abdominal pain, fatigue, and being slightly unsteady on his feet. He states that he has never had these symptoms before and it feels different than his previous admissions for heart failure exacerbation (2 months and 5 months prior). In the emergency department, SP presents as somnolent but alert and oriented to person and place. Upon further review of his medical history, SP reports that he has cirrhosis, heart failure, and a distant history of a single seizure when he used to drink bunches of alcohol but never misses any doses of his medications.

Past Medical History

1. History of alcoholic cirrhosis
2. Asthma
3. Remote history of alcohol withdrawal seizures (last was 4 years ago)
4. Heart failure with reduced ejection fraction
5. Erectile Dysfunction

Allergies/Intolerances:

Ciprofloxacin – "trouble breathing and full body rash"

Naproxen – GI upset and acute kidney injury

Outpatient Drug Therapy

Drug Name/Dose/Strength/Route	Prescribed Schedule	Duration Start–Stop Dates	Prescriber	Pharmacy
1. Albuterol inhaler	QID PRN SOB	01/12/2012 – Present	Dr. Dice	CVS
2. Salmeterol 50 mcg inhalation	Twice daily AM/PM	01/12/2014-- Present	Dr. Dice	CVS
3. Phenytoin 400 mg PO	Daily in PM	01/12/2008 – Present	Dr. Dice	CVS
4. Enalapril 10 mg PO	Twice daily AM/PM	04/15/2016—Present	Dr. Hooper	CVS
5. Metoprolol tartrate 100 mg PO	Twice daily AM/PM	07/01/2016—Present	Dr. Hooper	CVS
6. Furosemide 40 mg PO	Daily AM	09/15/2016—Present	Dr. Hooper	CVS

7. Isosorbide mononitrate 30 mg PO	Daily AM	10/15/2016—Present	Dr. Hooper	CVS
8. Potassium chloride 40 mEq PO	Daily AM	10/15/2016—Present	Dr. Hooper	CVS
9. Sildenafil 50 mg PO	As needed	01/12/2008-- Present	Dr. Dice	Walgreens

Medication History

SP has prescriptions from his cardiologist (Dr. Hooper) and his primary care physician (Dr. Dice).

Adherence/dosing issue: He is adherent to all his medications except for not taking his isosorbide mononitrate for the last month secondary to headache that he gets after use. States he doesn't and has never had angina type pain. He states that he typically uses his albuterol inhaler only once a week and isn't awakened at night with symptoms. SB states that he missed his evening doses of medications prior to admission.

Surgical History

Humerus fracture repair at age 26

Large volume therapeutic paracentesis (10/2016 and 8/2016)

Family History

Father died of liver failure at 54

Mother still alive with a history of hypertension and COPD

Brother died in motor vehicle accident at age 22

Social History

Alcohol intake: heavy drinker until 3/17/2012, no drinks since then (patient is very proud of this)

Tobacco: 15 pack years, none since 3/17/2012

Illicit drugs: history of cocaine use, none since 3/17/2012

Employment: Works as a server at the Hard Rock Cafe

Married for 4 years

Vaccination history

Up to date on all vaccinations, hepatitis A and B vaccine series, and last flu shot 09/2016

ROS

Positive for dyspnea, febrile, abdominal tenderness with guarding, A&O x 2

Physical Exam

General: Middle-aged male in moderate distress

HEENT: Mild scleral icterus, minimal nystagmus, gums have mild swelling

Chest: CTA bilaterally, good air movement in all lobes, no rhonchi/rales/crackles, dyspnea

Cardiovascular: negative JVD, no gallops/murmurs, absence of angina

Abdomen: tenderness with guarding, moderate abdominal distension, Grade 2 ascites

Genitourinary: WNL

Extremities: 2+ pitting edema

Neuro: AO x 2; unsteady gait/balance, negative asterixis

Psych: Mood: "anxious"; wants to feel better

Vital signs

HR: 90 bpm

RR: 16 bpm

BP: 124/83 mmHg

Temp: 102.2° F

Pain score: 8/10

Labs

	Dec 2 nd	Historical
Metabolic Panel		
Na (mEq/L)	132	
K (mEq/L)	4.9	3.7 (10/15/16)
Cl (mEq/L)	104	
CO ₂ (mEq/L)	26	
BUN (mg/dL)	32	
SCr (mg/dL)	1.2	1.0 (10/15/16)
Glucose (mg/dL)	95	
Calcium (mg/dL)	8.5	
Phosphorus (mg/dL)	3.3	
Magnesium (mEq/L)	1.9	
Albumin (g/dL)	2.4	
AST (IU/L)	45	51
ALT (IU/L)	39	41
Total bili (mg/dL)	4.1	3.7
CBC		
WBC (million/mm ³)	18.1	
Hgb (g/dL)	12.3	
Hct (%)	37.8	
Plt (K/mm ³)	165	
Other		
Ammonia (mmol/L)	26	27
BNP (pg/mL)	76	685 (10/15/16)
PT (seconds)	17	
INR	1.3	
Ethanol (mg/dL)	0	0 (10/15/16)
A1c (%)	5.6	
Phenytoin (mcg/mL)	15.5	
Ejection fraction (%)		30 (7/01/2016)
FEV ₁ (%)		85 (04/18/2016)

Tests

Chest X-ray: No acute abnormalities

EKG: Sinus pattern; no ischemic changes

Abdominal US: presence of ascitic fluid, no other abnormalities

CT chest/head: mild ascites, otherwise unremarkable with no neuro abnormalities

Paracentesis:

Dec 3rd at 04:30

A total of 2.5 liters were removed

Appearance: cloudy

Serum-to-ascites albumin gradient (SA-AG): 15 g/L

Cell count: RBC <1000 mcg/L, polymorphonuclear leukocytes (PMNs) 475 cells/mm³, WBC many

Gram stain/culture: pending

Pain decreased to 4/10 following paracentesis

Current Drug Therapy

Drug name/dose/strength/route	Prescribed schedule	Start date	Indication
Vancomycin 1000 mg IV	Dose per pharmacy	12/02/16	Spontaneous bacterial peritonitis
Albuterol inhaler	Four times daily as needed	12/03/16	Shortness of breath
Salmeterol 50 mcg inhalation	Every 24 hours	12/03/16	Asthma
Phenytoin 400 mg PO	Every 24 hours	12/03/16	Seizures
Enalapril 10 mg PO	Twice daily	12/03/16	Heart failure
Metoprolol tartrate 100 mg PO	Twice daily	12/03/16	Heart failure
Furosemide 40 mg PO	Every 24 hours	12/03/16	Heart failure
Potassium chloride 40 mEq PO	Every 24 hours	12/03/16	Heart failure
Isosorbide mononitrate 30 mg PO	Every 24 hours	12/03/16	Heart failure
Acetaminophen 500 mg PO	Every 6 hours as needed	12/03/16	Fever and/or pain
Ondansetron 4 mg IV	Every 6 hours as needed	12/03/16	Nausea
Enoxaparin 40 mg SQ	Every 24 hours	12/03/16	DVT prophylaxis

Patient Narrative

SP is admitted to the general medical floor and diagnosed with presumptive spontaneous bacterial peritonitis and started on empiric vancomycin. A paracentesis was performed but gram stain and culture results are pending. A presumptive respiratory infection and/or asthma exacerbation have been ruled out.

The medical resident asks you to review the patient's report and make recommendations for definitive antibiotic therapy as well as any other suggestions regarding this patient's care.

Problem Identification and Prioritization with Pharmacist's Care Plan

- A. List all health care problems that need to be addressed in this patient using the table below.
- B. Prioritize the problems by indicating the appropriate number in the "Priority" column below:
- 1 = Most urgent problem (Note: There can only be one most urgent problem)
 - 2 = Other problems that must be addressed immediately or during this clinical encounter; **OR**
 - 3 = Problems that can be addressed later (e.g. a week or more later)

**Please note, there should be only a "1", "2", or "3" listed in the priority column, and the number "1" should only be used once.*

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Spontaneous bacterial peritonitis (SBP)	1	- Eradicate infection - Reduce the risk of morbidity and mortality from infection - Resolve symptoms of infection - Prevent recurrent episodes of SBP - Control febrile episodes	- Discontinue vancomycin - Initiate antibiotic coverage to cover the most common bacterial pathogens (E.coli, K. pneumonia, and pneumococci) - Cefotaxime 2 g every 8 hours IV for at least 5 days (7-10 days is acceptable) - Additional options include: - Ceftriaxone 1-2 g q12-24 hours - Cefepime 1-2 g q8-12 hrs - Zosyn 3.375g q6 hrs or 4.5g q8hr (could be 3.375g q8 hrs if extended infusion) - Ertapenem 1 g q24 hrs - Treatment with norfloxacin, levofloxacin, and/or ciprofloxacin would be inappropriate based off of patient's documented allergy to ciprofloxacin - Additional therapy with antibiotic choice should include Albumin 1.5 g/kg (112.5 g) on day 1 followed by 1 g/kg (75 g) on day 3 (doses may be rounded per institution guidelines) - Initiate trimethoprim/sulfamethoxazole DS tablet once daily PO (1 DS tab 5 days/week is acceptable) following treatment with cefotaxime (other abx above) for long-term SBP prophylaxis - Treatment with norfloxacin or other FQ would	Efficacy - Daily CBC to monitor WBC - Resolution of infection (e.g. normalization of temperature, resolution of chills, resolution of abdominal pain/tenderness) - Follow-up on gram stain and culture results and deescalate antibiotics as appropriate - SCr to monitor development of hepatorenal syndrome - Pain Safety - S/Sx of hypersensitivity and other adverse effects - Monitor for anaphylactic reaction to antibiotics and albumin - Development of nausea/vomiting/diarrhea (antibiotics) - Bactrim: hyperkalemia, SCr elevation, rash, sun sensitivity, Stevens-Johnson, TEN - Albumin: pulmonary edema, fluid overload - APAP: number of usage, EtOH abstinence

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			be inappropriate secondary to patient's documented allergy to ciprofloxacin - Continue low dose acetaminophen for fever control. NSAIDS should be avoided due to patient allergy and heart failure. <u>BONUS</u>: max dose of acetaminophen should be 2 grams per day	
Treatment of recurrent ascites	2	Prevent recurrent ascites development	- Initiate spironolactone 100 mg once daily PO - Continue furosemide 40 mg once daily PO/IV <u>Bonus</u>: for recommending further titration of spironolactone and furosemide doses in 100mg:40mg ratio - Potassium chloride should be discontinued or dose reduced secondary to patient's elevated potassium and addition of spironolactone - Sodium restriction of <2000 mg per day	Efficacy - Recurrent ascites - Urinary electrolytes: sodium and potassium to determine spironolactone titration - Sodium, potassium, SCr - BP - Total sodium intake Safety - Spironolactone: hyperkalemia, gynecomastia, increased SCr - Furosemide: hypokalemia, increased SCr
History of alcohol withdrawal seizure	2	- Prevent adverse effects of medications - Prevent/avoid unnecessary medication therapy	- Discontinue phenytoin therapy. The patient may be experiencing adverse symptoms secondary to supratherapeutic phenytoin level. - Phenytoin should, at the very least, be held until symptoms resolved and level is no longer supratherapeutic. Phenytoin could possibly be restarted at a lower dose after a couple days to allow the patient to be tapered off of the medication.	Efficacy - Number/frequency of seizure episodes Safety - Phenytoin: CNS depression, confusion, sedation, unsteadiness, gingival hyperplasia, rash, nystagmus
Modification of asthma regimen	3	- Appropriate asthma treatment regimen - Reduce symptoms	- Discontinue salmeterol - Could initiate 1 of the 2 options below - Option 1: Initiate a low-dose ICS - Several options are available here including	Efficacy - Asthma control - Proper medication technique - Patient adherence - Lung function/spirometry

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
		- Reduce use of short-acting inhaler use - Prevent exacerbations and hospitalizations	(total daily dose range): - beclomethasone MDI 80-240 mcg - budesonide DPI 180-540 mcg - ciclesonide MDI 160-320 mcg - flunisolide MDI 320 mcg - fluticasone MDI 88-264 mcg - fluticasone DPI 100-300 mcg - mometasone 110-220 mcg - Option 2: Continue albuterol inhaler four times a day as needed for shortness of breath while monitoring symptoms for possible medical regimen change as necessary	every 1-2 years Safety - Albuterol: tachycardia, tremor, nervousness - ICS: candidiasis, thrush, rinse mouth after each use
Heart failure with reduced ejection fraction	3	- Prevent symptoms and hospitalizations - Decrease mortality	- Continue current therapy with: - enalapril 10 mg twice daily PO - metoprolol 100 mg twice daily PO - furosemide 40 mg once daily PO <u>Bonus:</u> addition of sacubitril/valsartan 49/51 mg twice daily PO (if added, enalapril must be discontinued and wait 36 hours for addition of sacubitril/valsartan) - Spironolactone will be initiated for ascites control but may help with heart failure as well (dose should be for ascites and not heart failure) - Discontinue or decrease the dose of potassium chloride due to addition of spironolactone and higher potassium concentration - Discontinue isosorbide secondary to drug interaction with sildenafil, patient noncompliance, and adverse effects experienced by patient (in addition, there is no benefit of isosorbide if not given with hydralazine)	Efficacy - Control symptoms, SOB, weight, SCr, BP Safety - Enalapril: hyperkalemia, increased SCr - Metoprolol: heart rate, blood pressure, fatigue - Furosemide: see above - Spironolactone: see above - Isosorbide: should be discontinued
Erectile dysfunction	3	Prevent erectile dysfunction	Continue sildenafil 50 mg PO as needed for sexual activity	Efficacy Optimal erectile response

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
				Safety Sildenafil: see above
Health maintenance	3	- Maintain healthy behaviors - Avoid polypharmacy	- Counsel patient on continued abstinence from alcohol and smoking - Counsel patient on importance of obtaining all medications from one pharmacy	Encourage follow-up and use of one pharmacy to help prevent polypharmacy, identify medication interactions, and improve adherence to medications