

Team # _____

2023
ASHP Clinical Skills Competition SM
ASHP Local Competition Case

Directions to Clinical Skills Competition Participants

Identify the patient's acute and chronic medical and drug therapy problems. Recommend interventions to address the drug therapy problems using the forms supplied (Patient Case and Pharmacist's Care Plan).

IMPORTANT NOTE: Only the Pharmacist's Care Plan will be used for evaluation purpose.

Pharmacist's Care Plan

Using the patient's data, you will be able to develop an effective care plan for your patient. Clearly define the health care problems. Health care problems include treatment of all acute and chronic medical problems, resolution of all actual or potential drug-related problems, and identification of any other health care services from which your patient may benefit.

Remember to think about potential medical problems for which your patient may be at risk and disease prevention and disease screening activities that may be appropriate to recommend. Also, don't forget to consider specific patient factors that may influence your goals and recommendations for therapy (e.g., physical, psychological, spiritual, social, economic, cultural, and environmental).

To complete your care plan, specify all of your patient's health care problems that need to be addressed. Then prioritize the problems into one of three categories: (1) 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/at discharge or next follow up visit). Please note that only one problem should be identified as the "most urgent problem." When identifying individual problems for the case use more specific terms when possible vs general disease conditions. Also, use actual rather than weight-based doses when providing recommendations for therapy.

Then for **each problem** describe the (1) therapeutic goals, (2) recommendations for therapy, and (3) monitoring parameters and endpoints. Your monitoring parameters should include the frequency of follow-up and endpoints should be measurable by clinical, laboratory, quality of life, and/or other defined parameters (e.g., target HDL is greater than 50 mg/dL within 6 months).

LOCAL CASE

2023 ASHP CLINICAL SKILLS COMPETITION

Demographic and Administrative Information

Name: Alice Little	Patient ID: 116821611
Sex: Female	Room & Bed: Med/Surg Room 702
Date of Birth: 6/27/1955	Admitting Physician: Dr. Dale Herold
Height: 5'4" / Weight: 218 lbs / Ethnicity: African American	Religion: Christian
Prescription Coverage Insurance: Private (United Health)	Pharmacy: Hometown Pharmacy
Copay: \$5/\$10	Annual Income: \$60,000

Chief Complaint

"My wife is confused and out of it."

History of Present Illness

Alice Little is a 68 yo female patient brought to the ED by her husband and daughter for decreased level of consciousness, fever, and confusion. According to her husband she had been complaining of lack of energy and being tired for about a month but overall was in her usual state of health and independent with all activities. In fact, yesterday Mrs. Little had volunteered at her local women's shelter and spent some time watching her 3 grandchildren. The morning of admission she claimed she was not feeling well and thought she might be picking up a cold. Her husband noted she only had a little tea for breakfast. She developed a fever and a headache and went to lay down and rest for a bit. When her husband went in to check on her about an hour later, he found her hard to arouse, confused and talking nonsense. He called his daughter, and they brought Mrs. Little to the ER.

Past Medical History

Anxiety – (diagnosed in 1995)
 Chronic Kidney Disease (Stage 3) – (diagnosed in 2020)
 Diabetes Mellitus (Type 2) – (diagnosed in 2014)
 Hyperlipidemia – (diagnosed in 2011)
 Hypertension – (diagnosed in 2008)
 Peripheral Vascular Disease – (diagnosed in 2020)

Outpatient Drug Therapy: History per Hometown Pharmacy and husband

Prescription Medication & Schedule	Duration Start–Stop Dates	Prescriber
Atorvastatin 20 mg PO daily	2018-Present. Last dose yesterday evening	Dr. Claudia Payne
Chlorthalidone 25 mg PO daily	2021-Present. Last dose this morning	Dr. Claudia Payne
Lisinopril 20 mg PO daily	2020-Present. Last dose this morning	Dr. Claudia Payne
Metformin 500 mg PO BID with meals	2016-Present. Last dose yesterday evening	Dr. Claudia Payne
Venlafaxine XR 150 mg PO daily	2021-Present. Last dose this morning	Dr. Patrick O'Hearn

Non-Prescription Medication/Herbal Supplements/Vitamins	Duration Start–Stop Dates
Acetaminophen 1000 mg PO Q8H PRN headache	Last dose this morning
Cholecalciferol 25 mcg PO daily	2022-Present. Last dose yesterday
Fluticasone propionate nasal spray 50mcg/spray, 2 sprays in each nostril daily PRN seasonal allergies	2018-Present. Last used 6/23

Medication History

Mrs. Little's husband reports that his wife is responsible with taking her medications and rarely misses a dose, but he is concerned that she takes care of everyone else and not her own health.

Allergies/Intolerances

Augmentin - diarrhea

Dapagliflozin - rash

Pollen (seasonal) - itchy watery eyes, runny nose

Surgical History

Distal radius fracture repair - 2002

Tonsillectomy - 1961

Family History

Father - diabetes mellitus type 2, hypertension, myocardial infarction at age 64. Passed away of heart failure at age 78.

Mother - breast cancer at age 55, hypertension, diabetes mellitus type 2. Passed away at age 89 from an intracranial hemorrhage.

Sister - breast cancer at age 62, diabetes mellitus type 2.

Social History

Tobacco - never smoker

Alcohol - occasional social drinks

Illicit drug use - never

Occupation: retired daycare provider

Immunization History

All childhood vaccines through age 18

Zostavax (live attenuated zoster vaccine) 7/2015

Pneumococcal PPSV23: 7/2020

Tdap: 7/2020

Pfizer-BioNTech COVID-19 Vaccines:

Primary Series: first dose 2/2021, second dose 3/2021

Booster: 10/2021

Bivalent Booster: 10/2022

Review of Systems (source: husband)

Constitutional: well-developed, well-nourished female. Confused, restless, moving all extremities but not following commands. Febrile.

HEENT: Reported headache earlier today.

GI: no complaints of abdominal pain, no nausea/vomiting or bleeding reported

GU: no complaints of dysuria, increase urinary frequency, or bleeding per husband

Neurological: Does not follow commands but does open her eyes to painful stimuli. Speech not intelligible. Not alert or oriented.

Physical Exam

General: obese female, lying in bed with eyes closed, minimally arousable to verbal stimuli, agitated, not following commands

ENT: no lesions or discharge, mucous membranes are dry

Eyes: pupils equal and responsive to light, EOMI intact

Neck: supple, symmetrical, nuchal rigidity noted

Neuro: somnolent, restless, mumbles, but does not answer questions. Limited exam. Glasgow coma score 9.

Lungs: clear to auscultation bilaterally, non-labored

CV: regular rhythm, tachycardic, no murmur or gallop

Abdomen: nondistended, nontender. No rebound/guarding. No hepatosplenomegaly.

Skin: dry, no skin lesions, cuts, or bruises

Extremities: pulses present in all extremities, no edema, normal range of motion

Vital signs

HR: 92 bpm

RR: 19 bpm

O2 Saturation: 99% on room air

BP: 135/82 mm Hg

Temp: 102.1°F

Labs

	Today in ER	Office Visit 2/15/2023
Metabolic Panel		
Na (mEq/L)	137	142
K (mEq/L)	3.1	3.8
Cl (mEq/L)	104	105
CO ₂ (mEq/L)	20	25
BUN (mg/dL)	59	15
SCr (mg/dL)	2.2	1.6
Glucose (mg/dL)	148	125
Calcium (mg/dL)	8.2	8.7
Phosphorus (mg/dL)	3.4	4.2
Magnesium (mg/dL)	2.0	2.6
Albumin (g/dL)	3.3	3.4
AST (IU/L)	17	26
ALT (IU/L)	26	34
Alk Phos (unit/L)	99	79
Total bili (mg/dL)	0.7	0.6
Ammonia (umol/L)	13	
Complete Blood Count		
WBC (thousands/mm ³)	22.9	7.93
RBC (thousands/mm ³)	3.8	4.45
Hgb (g/dL)	8.7	12
Hct (%)	30	39
MCV (fL)	67.8	87.6
MCH (pg)	19.5	28.8
MCHC (g/dL)	28.7	32.8
RDW (%)	20.4	12.7
RDW-SD (fL)	49.1	40.8
Plt (K/mm ³)	313	263
Fasting Lipid Panel		
Total cholesterol (mg/dL)		182
LDL (mg/dL)		105
HDL (mg/dL)		48
Triglycerides (mg/dL)		145

Other			
Hemoglobin A1c (%)	7.5		7.6
Lactic Acid (mmol/L)	2.3 (on admit to ED)	1.8 (repeat after fluid bolus)	
Troponin I (ng/mL)	0.021		
INR	1		
TSH (uIU/mL)	2.180		
Procalcitonin (ng/mL)	5.38		
Iron (mcg/dL)	25		
Iron Binding Capacity (mcg/dL)	420		
Iron Saturation (%)	6		
Ferritin (ng/mL)	29		
Urinalysis			
Color	Yellow		
Transparency	Clear		
Bilirubin	Negative		
Specific Gravity	1.025		
U PH	5.5		
Leukocytes	Negative		
Nitrates	Negative		
Protein	1+		
Urine Glucose	Negative		
Ketones	Negative		
Blood	Negative		
Urobilinogen	<2		
WBC/HPF	0-2		
RBC/HPF	0-2		
EPI/HPF	0-2		
Bacteria	Few		

Other Diagnostic Tests

Lumbar Puncture:

Spinal Fluid

Color	Colorless
Appearance	Cloudy
Glucose (mg/dL)	4
Total Protein (mg/dL)	206
RBC (/mm ³)	29
WBC (/mm ³)	1292
Bands (%)	22
Segs (%)	18
Eosinophils (%)	6

Basophils (%)	1
Lymphs (%)	33
Mono (%)	6
Basophils (%)	1

CSF Culture: Pending

CSF Meningitis PCR Panel: Pending

Blood cultures x2 sets: Pending

Chest X-ray: No acute cardiopulmonary process

EKG: Normal sinus rhythm. QTc = 442ms

CT scan of the head: No acute abnormalities

Fecal occult blood test: Negative

Admission Medications	Administration/Start time
Lactated Ringers 3000 ml IV bolus in ED	Complete within 2 hours of arrival in ED
Sodium Chloride 0.9% continuous infusion at 75 ml/hr	Started in ED after completion of LR bolus
Ceftriaxone 2 g IV q24h	First dose given in ED within 2 hours of arrival
Dexamethasone 10 mg IV once in ED	Complete. First dose given 5 minutes prior to antibiotics
Vancomycin 1000 mg IV once. Dose currently infusing from ED.	Started about 20 minutes ago
Acyclovir 990 mg IV q12h	Starting today ASAP
Enoxaparin 40 mg SC daily starting tomorrow AM	Starting tomorrow 09:00
Pantoprazole 40 mg IV daily	Starting today 21:00
Acetaminophen 1000 mg po every 6h prn mild pain	
Ondansetron 4 mg IV every 8h prn nausea/vomiting	
Fentanyl 25 mcg IV every 4h prn severe pain	

Emergency Department Notes:

Assessment: Meningitis/Sepsis

In the ED a work-up was performed. Labs were drawn including 2 sets of blood cultures prior to the administration of antibiotics. Sepsis protocol was followed including fluid bolus, lactic acid checks and broad-spectrum antibiotic administration. A Lumbar puncture was done along with CSF cultures and a PCR panel which are currently pending. The patient currently has a peripheral IV line in her left antecubital and has an NPO diet order based on her mental status.

Plan:

Alice Little is admitted to your Intermediate Care Unit. As a member of the care team, please address pharmacotherapy recommendations with regard to targeted treatment of her meningitis as well as her other disease states, in order to optimize this patient's care both in the hospital and at discharge. The pharmacist was specifically consulted to dose vancomycin for this patient.

Team # _____

2023
ASHP Clinical Skills Competition SM
ASHP Local Answer Key

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	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
Bacterial Meningitis	1	<p>Bacterial meningitis diagnosis based on CSF results with low glucose, high protein and high WBC.</p> <ul style="list-style-type: none"> • Optimize antibiotics: <ul style="list-style-type: none"> • Ceftriaxone: change ceftriaxone to 2g IV q12 hours for CNS infection dosing • Ampicillin: add ampicillin 2g IV q8h for listeria coverage in adult >50 yo with renal impairment • Vancomycin Load: vancomycin dose in ER was only 1g. Administer another dose of vancomycin 1-2g IV for a total of 2-3g IV of a loading dose (20-35mg/kg). • Vancomycin maintenance dose: as renal function is not stable, it will be hard to select a specific vancomycin regimen. Options include: <ol style="list-style-type: none"> 1. (Best Option) schedule a level for 24 hours from the loading dose and determine at that time if we are to continue dosing based off levels or if we are able to transition to a specific regimen. A dose can be given if the level is <20 mg/dL at that time. 2. (Alternative option) Order vancomycin in the range of 10 mg/kg IV every 24 hours to 20mg/kg every 48 hours. Doses of 1000mg q24h, 1000mg q36h, 1250mg q36h, 1500mg q36h, 1750mg q48h, and 2000mg q48h all give acceptable predicted AUC/troughs based on several sources (see Judges notes). 	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Eradicate infection • Reduce mortality • Reduce morbidity from meningitis such as hearing loss and other neurological complications <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Signs of infection such as WBC, fever, procalcitonin, mental status • Serum Creatinine • With addition of dexamethasone monitor blood glucose as those may become elevated. • Vancomycin levels- either check a level 24 hours from the loading dose and plan to re-dose if that level is <20mg/dL, or if starting a scheduled dose, check a level in 2-3 days to assess the chosen regimen. Goal would be AUC of 400-600 mg-hr/L or vancomycin troughs of 15-20. • Blood cultures and CSF culture results • Monitor for vancomycin infusion reaction and if seen slow infusion rate

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
		<p>At least a vancomycin trough should be ordered for monitoring but a set of 2 levels could be appropriate for some AUC monitoring programs. Therapeutic monitoring for vancomycin should be done within the first 2-3 days in this patient who is acutely ill with meningitis. If renal function stabilizes, would plan to transition to AUC dosing with goal of AUC:MIC ratio of 400-600 mg-hr/L. Doses should be given no faster than 1g/hour.</p> <ul style="list-style-type: none"> • Acyclovir: recommend acyclovir be stopped as the clinical picture is that of bacterial meningitis based on LP results. If the team wants to continue acyclovir until CSF cultures return, as the PCR results are still pending, the dose should be reduced in obesity (BMI ≥ 30kg/m²) from using actual body weight (99kg) to using ideal body weight (54.7kg) for a dose of 547mg or 550mg. • Continue Dexamethasone 10mg or 0.15mg/kg (14.85mg or 15mg) IV q6h x4 days as adjunct therapy for bacterial meningitis. First dose was given in ER at the time of antibiotic initiation. (Recommended to start before or at the same time as antimicrobials.) Follow up on PCR and culture results and discontinue if the pathogen is not <i>S. pneumoniae</i>. • Follow up on cultures from blood and CSF along with PCR panel to confirm antibiotics will cover organism isolated as well as to be able to de-escalate therapy once organism and sensitivities are known. • Consider possible carcinomatosis meningitis given family history of breast cancer. Send CSF sample for cytology and consider MRI of the head if infectious work up is not conclusive. • Tailor length of treatment to organism detected. Typical durations are 7-21 days. 	<ul style="list-style-type: none"> • Monitor for adverse effects of antimicrobials: hypersensitivity reaction, antibiotic associated diarrhea or <i>C. difficile</i> infection, hemolytic anemia, rash, nephrotoxicity, ototoxicity, thrombocytopenia
Hypokalemia	2	<ul style="list-style-type: none"> • Replace potassium for K of 3.1 mEq/L. Recommend dose of 40 mEq IV of KCl to replace to a goal of 3.5 mEq/L. Acceptable range would be 20-80mEq IV as a total dose which could be split into 10-20mEq doses every 6-12hours. Given ARF would stay on the conservative side and check levels to determine response. Give supplementation IV as she is currently NPO. With only a peripheral line, would give no faster than 10meq/hour and at a concentration of 10meq/100ml at most. • As an alternative, potassium could be added to IV fluids. Adding 20meq KCl/L at the current rate would provide 36 mEq/day. Recheck 	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • K levels in normal range 3.5-5 mEq/L • Decrease risk of EKG abnormalities <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Recheck K level 2-4 hours after dose complete and every 24 hours until patient stabilizes

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
		<p>potassium 2-4 hours after replacement is complete and every 24 hours to assess need for further replacement.</p>	<ul style="list-style-type: none"> Avoid extravasation. If pain or phlebitis occurs, may decrease infusion rate or dilute dose further
Acute on Chronic Renal Failure	2	<p>CrCl calculated using Cockcroft-Gault equation and Adjusted BW is 28ml/min. ARF likely related to sepsis/prerenal given BUN to Creatinine ratio of > 20:1. Continue with cautious fluid administration. Renally adjust any medications</p> <ul style="list-style-type: none"> Enoxaparin: 30mg SC daily is the renal dose adjustment for the enoxaparin 40mg SC daily that was ordered. Could also recommend heparin 5000 units SC every 8 hours in place of enoxaparin for VTE prophylaxis given renal dysfunction. Concerns have been raised that despite dose adjustments enoxaparin may accumulate in ARF leading to an increased risk of bleeding, however, generally LMWH are preferred over UFH. See VTE prophylaxis in care plan. Ampicillin: Renal adjustment for usual dose of 2g IV q4h is 2g IV q8h Acyclovir: If continuing acyclovir, not only would the dose be adjusted to be based on IBW in obesity, but the renal adjustment is based on CrCl in mL/min/1.73 m² which converts to a CrCl of 24 ml/min/1.73m² and correlates to a dose of acyclovir 547mg IV q24h instead of q12h. Monitor renal function with acyclovir and ensure adequate hydration to prevent crystallization in the urine <p>Hold home lisinopril and metformin until ARF resolving as metformin is contraindicated in ARF and lisinopril could worsen renal perfusion and ARF.</p>	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> Renal function to return to baseline of 1.6.mg/dL Avoid nephrotoxic medications Limit adverse effects from accumulation of medications that are cleared by the kidney <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> Serum Creatinine BUN Urine output In and out/fluid status Monitor for need to adjust medications back to standard doses if renal function improves or further reduce if renal function worsens
VTE prophylaxis	2	<p>Patient is at risk for VTE due to immobility, obesity, sepsis and age</p> <p>Given this patient has renal impairment either LMWH or UFH are options for VTE prophylaxis. See ARF section above. Based on BMI >30kg/m² the recommended dose of heparin would be 5000 units SC every 8h. If we plan to continue with enoxaparin the dose adjustment for renal impairment would be 30mg SC daily.</p> <p>Patient just underwent lumbar puncture. Would recommend waiting at least 4 hours to start anticoagulation and up to 24 hours from procedure.</p>	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> Prevent venous thrombotic events <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> CBC including platelets in order to assess for HIT and watch for laboratory signs of bleeding Renal function

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
			<ul style="list-style-type: none"> • Symptoms of bleeding such as blood in urine or stool, dark tarry stools, large bruises or easy bruising • Signs and symptoms of VTE including pain, redness, warmth and swelling in limbs, sudden onset of shortness of breath
Pain management	2	<p>Anticipate pain related to meningitis and headache would need treatment but would improve as infection is treated, and pain management would be short term</p> <ul style="list-style-type: none"> • For Mild Pain: Acetaminophen 1000mg po every 6 hours as needed for mild pain is reasonable, however the patient is currently not able to take PO. Recommend adding an option for acetaminophen 650mg suppository rectally q4-6h prn for mild pain. Acetaminophen 1000mg IV q6h could be used but is more expensive than suppositories. Max dose of acetaminophen in 24 hours is 4g. • For Moderate Pain: Consider adding something for moderate pain. With her inability to take oral options at this time consider low dose IV options such as hydromorphone 0.2-0.5mg q2-4 hours. Fentanyl 12.5mcg-25mcg q1-2 hours could be a secondary option • For Severe Pain: Fentanyl 25mcg IV every 4h as needed for severe pain could be continued, however due to its shorter half-life, every 4h dosing may result in breakthrough pain. Additionally, fentanyl does have a small risk of serotonin syndrome given the patient was previously on venlafaxine at home. May be prudent to switch to hydromorphone 0.2-0.5mg IV every 4 hours both for the slightly longer dosing interval and for risk of serotonin syndrome. • Monitor for ability to use oral options and switch when able. • Consider adding a bowel regimen if she continues to need narcotic pain medications once she is able to take po. • Consider non-pharmacologic options for pain control 	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Pain scores in 1-3 range out of 10 or as stated acceptable by patient • Use minimal amount of opioid medications as possible while still treating pain <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Pain scores • Sedation/respiratory depression with narcotic use • Total acetaminophen dose <4g per day • Bowel movements • Ability to transition to oral pain medications

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
Hypertension	2	<p>Blood Pressure goals are SBP < 130 and DBP <80 mmHg for a patient with diabetes per the ACC/AHA 2017 guideline, however the KDIGO 2021 Blood Pressure in CKD guideline recommends a lower goal of <120mmHg SBP. Either are acceptable.</p> <ul style="list-style-type: none"> • Current blood pressure is 135/80. Patient has been diagnosed with sepsis. Monitoring of blood pressure is warranted but we do not need to treat at this time as the risks of hypotension are more concerning given her acute illness. If her blood pressure trends up we could consider adding an IV agent as needed such as hydralazine 5-20mg IV q6h prn SBP >160 or labetalol 5-10mg IV q6h prn SBP >160 until we are able to restart her home medications. • Restart home medications of chlorthalidone and lisinopril as able given NPO status and renal function. Chlorthalidone can be restarted once the patient is no longer NPO. Lisinopril can be restarted when her renal function returns to her baseline SCr of about 1.6 mg/dL. • If blood pressure remains elevated as patient recovers from infection, could consider adding an agent such as a calcium channel blocker for additional blood pressure control given she is already on an ACEI and diuretic. <p>Encourage healthy lifestyle choices such as low salt diet and exercise.</p>	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Blood pressure in goal range of <130/80 mmHg in patients with diabetes (or may reference <120mmHg SBP) • Continue to perfuse end organs given diagnosis of sepsis. Goal MAP >65 • Prevent cardiovascular adverse effects and end organ damage • Encourage healthy lifestyle choices that compliment medical therapy <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Blood pressure • Heart rate • Renal function/urine output • Diet and exercise <p>Monitor for adverse effects from blood pressure medications including dizziness, hypotension, hyperkalemia, angioedema, and cough.</p>
ASCVD Risk	2	<p>Total Cholesterol = 175mg/dL. LDL Cholesterol = 99 mg/dL. ACC/AHA Pooled Cohort Calculator predicts a 10 year risk of 24% for first MI, CHD death or Stroke. Overall, the patient has multiple risk factors that put her at high risk for ASCVD events Recommend high dose statin therapy. Options include increasing atorvastatin to 40mg daily or 80mg daily, or switching to rosuvastatin renally adjusted to 10mg daily.</p>	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Continue to keep total cholesterol within goal range of < 200mg/dL and reduce LDL cholesterol to <70mg/dL • Reduce CVD risk of adverse events <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • LFTs • Cholesterol panel <p>Monitor for adverse effects of statins including myalgias, liver problems, GI upset.</p>
Iron Deficiency Anemia	3	<p>Iron Deficiency Anemia based on lab work. Ferritin < 30 ng/mL, and TSAT = 5.95</p>	<p>Therapeutic Goals:</p>

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
		<ul style="list-style-type: none"> • Recommend starting any oral iron supplement once the patient is taking PO (as an example: ferrous sulfate 325mg with 65mg elemental iron) with one dose every other day (or M-W-F). • Re-check Hgb/CBC and Iron studies in 2-4 weeks. <p>This patient does not have a compelling indication to use IV iron and it is not considered better for initial treatment as compared to oral iron. IV iron also has risk for more severe adverse effects such as anaphylaxis. As far as a dose of oral iron, daily oral iron has been shown to have more adverse effects and similar outcomes as compared to every other day iron administration and no specific product has been shown to be better than another.</p> <p>GI consult to evaluate for source of bleeding including GI malignancy and to assess for H. pylori, or celiac disease as causes of iron deficiency anemia</p> <p>Expected duration 6-8 weeks to reverse anemia and up to 6 months to replenish iron stores</p>	<ul style="list-style-type: none"> • Hgb \geq 10 (improvement within the first month even if Hgb not completely recovered) • Patient perception of increased energy • Increase in ferritin to $>$30 ng/mL and TSAT to $>$ 20% <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Administer ferrous sulfate with food to prevent GI upset but avoid dairy products and fiber as those will decrease absorption. • Advise patient of adverse effects of ferrous sulfate: GI upset, dark stool color, constipation
Diabetes	3	<p>Diabetes not well controlled given Hgb A1C 7.5%. Blood glucose elevated on admit</p> <ul style="list-style-type: none"> • Recommend sliding scale insulin for inpatient use and blood glucose checks 4 times daily. Insulin chosen could be regular or short acting (aspart/lispro). Would not start basal at this time given NPO status until we can assess how much insulin she is needing. • Hold home metformin due to ARF • Follow blood glucose closely with starting dexamethasone for meningitis. Anticipate blood glucose will be elevated compared to baseline while on dexamethasone • Once ARF resolves and meningitis improves, resume home metformin and consider adding an agent to help reduce A1C to goal of $<$7. Given allergy listed to SGLT-2 would recommend GLP-1 receptor agonist as these have favorable outcomes in ASCVD and kidney disease as well as weight loss benefits. GLP-1 agonists are titrated as tolerated in most patients. • GLP-1 agonists include the following options that are considered high or very high efficacy for weight loss: (starting doses) 	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Hgb A1C $<$7 • Fasting blood glucose 80-130mg/dL • Maintain blood glucose within range of 140-180mg/dL during inpatient care without extremes of hypo or hyperglycemia • Prevent long term adverse effects of hyperglycemia • Encourage healthy lifestyle choices that compliment medical therapy <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Blood glucose • A1C • Renal function • Diet and exercise

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
		<ul style="list-style-type: none"> • Dulaglutide 0.75mg SC once weekly • Semaglutide 0.25mg SC once weekly or 3mg once daily • Liraglutide 0.6mg SC once daily • Tirzepatide 2.5mg SC once weekly • Other secondary options that are considered intermediate for weight loss: (starting doses) <ul style="list-style-type: none"> • Exenatide 5 mcg SC twice daily or Exenatide ER 2mg SC weekly • Lixisenatide 10mcg SC once daily 	<ul style="list-style-type: none"> • Monitor for adverse effects of GLP-1 agonists including GI upset, injection site irritation, hypoglycemia, mood changes, increased heart rate, reduced kidney function
Obesity	3	<p>BMI= 37.5 kg/m²</p> <ul style="list-style-type: none"> • Recommend addition of GLP-1 agonist for both diabetes management and obesity. Starting doses for all options are listed below (and in diabetes care plan above). All medications will need to be titrated as tolerated <ul style="list-style-type: none"> • Dulaglutide 0.75mg SC once weekly • Exenatide 5 mcg SC twice daily or Exenatide ER 2mg SC weekly • Semaglutide 0.25mg SC once weekly or 3mg once daily • Liraglutide 0.6mg SC once daily • Lixisenatide 10mcg SC once daily • Encourage lifestyle modifications. Stress the importance of taking care of her own health so that she can continue to care for others 	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Healthy lifestyle modifications • Weight reduction <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Diet, exercise and weight • Adverse effects of GLP-1 agonists: GI upset, injection site irritation, hypoglycemia, mood changes, increased heart rate, reduced kidney function • Monitor for ability to titrate doses upward
Anxiety	3	<ul style="list-style-type: none"> • Restart home venlafaxine 150mg XR daily once able to take PO • If not restarted right away monitor for symptoms of withdrawal syndrome such as dizziness, flu-like symptoms, fatigue, aggression, anxiety, headache, nausea, or diarrhea. • Encourage coping strategies in addition to medication therapy if patient becomes anxious during admission. 	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Minimize symptoms of anxiety • Encourage non-medication coping strategies <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Symptoms of anxiety • Mood changes including suicidal ideation • Symptoms of serotonin syndrome

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters
			<ul style="list-style-type: none"> • Bleeding, blood pressure changes, hepatotoxicity and drowsiness • Withdrawal syndrome
Immunizations	3	<p>Review patient's immunization status</p> <ul style="list-style-type: none"> • Needs PCV-20 or PCV-15 to complete pneumococcal series • Needs influenza vaccine for this year. • Needs updated recombinant zoster vaccine (Shingrix) as she previously had the live attenuated version 	<p>Therapeutic Goals:</p> <ul style="list-style-type: none"> • Reduce incidence of vaccine preventable disease <p>Monitoring Parameters:</p> <ul style="list-style-type: none"> • Hypersensitivity reactions • Injection site pain