2019
ASHP Clinical Skills Competition℠

NATIONAL COMPETITION CASE

Directions to National 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 (Pharmacist's Patient Data Base and Pharmacist's Care Plan).

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

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."

Then **for each problem** describe the (1) therapeutic goals, (2) recommendations for therapy, and (3) monitoring parameters. 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).

Team #_____

2019 ASHP CLINICAL SKILLS COMPETITION
PHARMACIST'S PATIENT DATABASE FORM

Demographic and Administrative Information

Name: Morris Wilson	**Patient ID:** 0798673
Sex: Male	**Room & Bed:** F4M5-02 (General Cardiology)
Date of Birth: 06/21/1951	**Physician:** Dr. Patel
Height: 5'10" / **Weight:** 160 lbs (dry weight) / **Race:** Caucasian	**Religion:** Secular/Atheist
Prescription Coverage Insurance: Medicare Part D	**Pharmacy:** CVS
Copay: $5 (90 day generics)/$10 – 1st Tier/$35 2nd Tier	**Annual Income:** $227,500

Chief Complaint: "I'm unable to sleep at night, can barely get around the house, and have had a relentless cough that has not stopped for a few weeks. I'm sick of spending time in the hospital because of my heart. Three times in three months is exhausting."

History of Present Illness: Mr. Wilson was recently seen in the heart failure clinic 11/21/2019 during which his valsartan was increased from 80mg twice daily to 160mg twice daily. He was noted to have a productive cough and 2+ pitting edema bilaterally in his lower extremities at this time for which his furosemide dose was also increased from 20mg once daily to 40mg once daily.

On 12/2/19 he presents to your medical center with the chief complaint noted above and was found to be warm on touch with a blood pressure of 116/60 mmHg. On assessment Mr. Wilson is noted to have 3+ pitting edema in his lower extremities. His weight at intake is 172 pounds. He has also developed an acute kidney injury with a previous baseline creatinine of 1.5 mg/dL. Given his presentation, the referring team started Mr. Wilson on a furosemide infusion of 10mg/hr and sodium nitroprusside drip at 0.5mcg/kg/min. A Swan-Ganz catheter was placed to help guide hemodynamic therapy. As such, the patient's rivaroxaban was stopped and a heparin drip was initiated.

Past Medical History

Heart Failure with a Reduced Ejection Fraction (HFrEF), NYHA Class II
Coronary Artery Disease (s/p STEMI with LAD stenting in January 2019, one 2mm stent placed)
Diabetes Mellitus Type II
Hypertension
Atrial Fibrillation (permanent)
GI Bleed (June 2019)

Outpatient Drug Therapy

Prescription Medication & Schedule	Duration Start–Stop Dates	Prescriber	Pharmacy
Valsartan 160 mg – One tablet twice daily PO	11/21/2019-Present	Dr. Johnson (Cardiologist)	CVS
Furosemide 40 mg – One tablet daily PO	11/21/2019-Present	Dr. Johnson (Cardiologist)	CVS
Metoprolol Succinate 200 mg - One tablet daily PO	09/17/2019-Present	Dr. Johnson (Cardiologist)	CVS
Aspirin 81 mg – One tablet daily PO	09/21/2017-Present	Dr. Johnson (Cardiologist)	CVS
Atorvastatin 80 mg – One tablet daily PO	09/21/2017-Present	Dr. Johnson (Cardiologist)	CVS
Rivaroxaban 20 mg – One tablet daily PO	09/21/2017-Present	Dr. Johnson (Cardiologist)	CVS
Clopidogrel 75 mg – One tablet twice daily PO	01/30/2019-Present	Dr. Johnson (Cardiologist)	CVS
Metformin 1000 mg – One tablet twice daily PO	03/28/2016-Present	Dr. Williams (PCP)	CVS
Pantoprazole 40 mg – One tablet once daily PO	6/14/2019-Present	Dr. Jones (Hospitalist)	CVS

Medication History
Mr. Wilson maintains that he rarely, if ever, misses any doses of his medications. His wife nodded in agreement.

Allergies/Intolerances
None

Surgical History
Appendectomy (1988)

Family History
Father died of a myocardial infarction (45 years old)
Mother is still alive; no siblings

Social History
Alcohol: drinks socially, 2-4 drinks per week
Tobacco: denies smoking or chewing
Illicit drugs: none
Employment: executive salesman for a biopharmaceutical company
Marital status: married, two adult children
Sexual history: single partner

Immunization History
Received all recommended childhood and adolescent immunizations through age 18
Other pertinent immunizations as noted:
Tetanus (Tdap) booster: 06/21/16
Influenza: 10/15/18

Review of Systems (12/2/2019)
Positive for wet, productive cough w/rales; shortness of breath; denies chest pain

Physical Exam (12/2/2019)
General: appears in moderate distress
HEENT: PERRLA
Chest: rales present bilaterally; tachypnea
Cardiovascular: JVP 10 cm, S3 gallop
Abdomen: positive bowel sounds
Genitourinary: WNL
Extremities: 3+ pitting edema; capillary refill > 2 seconds
Neuro: AO x 3
Psych: normal

Baseline Vital signs (12/2/2019)
HR: 88 bpm
RR: 18 breaths/min
O_2 Saturation: 90%, 2L oxygen via nasal cannula
BP: 114/80 mmHg
Temp: 37.8 ℃

Team #_____

Labs (on admission; 12/2/2019)

Metabolic Panel	
Na (mEq/L)	142
K (mEq/L)	5.2
Cl (mEq/L)	102
CO_2 (mEq/L)	24
BUN (mg/dL)	18
SCr (mg/dL)	2.4
Glucose (mg/dL)	170
Calcium (mg/dL)	9.5
Phosphorus (mg/dL)	4.2
Magnesium (mg/dL)	2.4
Albumin (g/dL)	4.8
AST (IU/L)	75
ALT (IU/L)	100
Total bili (mg/dL)	2.2
CBC	
WBC (million/mm^3)	4.3
Hgb (g/dL)	7.4
Hct (%)	26
Plt (K/mm^3)	360
Total Iron (ug/dL)	30
Ferritin (ng/mL)	8
Fasting Lipid Panel	
Total cholesterol (mg/dL)	208
LDL (mg/dL)	160
HDL (mg/dL)	48
Triglycerides (mg/dL)	128
Other	
BNP (pg/mL)	2,481
PT (seconds)	16
INR	1.6
HbA1c (%)	8.8

Current Drug Therapy (on admission; 12/2/2019)

Drug Name/Dose/Route	Prescribed Schedule and Administration	Start Date	Indication
Scheduled Medications			
Aspirin 81mg PO	81 mg once daily (0800)	12/2/19	CAD
Atorvastatin 80 mg PO	80 mg once daily (0800)	12/2/19	CAD
Clopidogrel 75 mg PO	75 mg once daily (0800)	12/2/19	CAD
Hydralazine 10 mg PO	10 mg three times daily (0600, 1400, 2200)	12/2/19	CHF
insulin lispro (human) 100 unit/mL injection SLIDING SCALE (0-5 units) Subcut	3x daily with meals and at bedtime (0800, 1200, 1800) For blood glucose < 151 mg/dL give no additional units; For blood glucose 151-200 mg/dL give 1 unit; For blood glucose 201-250 mg/dL give 2 units; For blood glucose 251-300 mg/dL give 3 units; For blood glucose 301-350 mg/dL give 4 units; For blood glucose 351-400 mg/dL give 5 units.	12/2/19	DMII
Pantoprazole 40 mg PO	40mg once daily (0800)	12/2/19	GI PPX
Continuous Infusions			
Furosemide 1000mg/100mL 0.9% NaCl	10 mg/hr continuous IV infusion	12/2/19	CHF
Heparin (25,000 units/500mL 0.9% NaCl)	Start at 12 units/kg/hr continuous IV infusion– titrate to therapeutic anti-xa (0.3-0.7) per heparin nomogram	12/2/19	AF
Sodium Nitroprusside 50mg/250mL 0.9% NaCl	0.5 mcg/kg/min continuous IV infusion	12/2/19	CHF

Other Diagnostic Tests

Chest X-Ray: cardiomegaly noted

Bedside Echocardiogram (TTE): Ejection Fraction – 25% (previously 40% November 2018)

EKG: atrial fibrillation; QTc = 435 ms

Pertinent Labs (Hospital Day 4; 12/6/2019)

Metabolic Panel	
Na (mEq/L)	138
K (mEq/L)	5.9
Cl (mEq/L)	100
CO_2 (mEq/L)	30
BUN (mg/dL)	30
SCr (mg/dL)	1.7
Glucose (mg/dL)	140
Calcium (mg/dL)	8.9
Phosphorus (mg/dL)	4.1
Magnesium (mg/dL)	2.2
Albumin (g/dL)	4.7
AST (IU/L)	18
ALT (IU/L)	30
Total bili (mg/dL)	0.8

Vital signs (12/6/2019)
HR: 84 bpm
RR: 12 breaths/min
O_2 Saturation: 98%, room air
BP: 128/86 mmHg
Temp: 37.6℃

Other Diagnostic Tests
Chest X-Ray: cardiomegaly now absent from prior imaging (12/2/2019)
EKG: atrial fibrillation; peaked t-waves

Current Drug Therapy (Hospital Day 4; 12/6/2019)

Drug Name/Dose/Strength/Route	Prescribed Schedule and Administration	Start Date	Indication
Scheduled Medications			
Aspirin 81mg PO	81mg once daily (0800)	12/2/19	CAD
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insulin lispro (human) 100 unit/mL injection SLIDING SCALE (0-5 units) Subcut	3x daily with meals and at bedtime (0800, 1200, 1800) For blood glucose < 151 mg/dL give no additional units; For blood glucose 151-200 mg/dL give 1 unit; For blood glucose 201-250 mg/dL give 2 units; For blood glucose 251-300 mg/dL give 3 units; For blood glucose 301-350 mg/dL give 4 units; For blood glucose 351-400 mg/dL give 5 units.	12/2/19	DMII
Metoprolol Succinate 200mg PO	200mg once daily (0800)	12/2/19	CHF
Rivaroxaban 20mg PO	20mg once daily (0800)	12/5/19	AF
Valsartan 160mg PO	Twice daily (0800, 2000)	12/5/19	CHF

Assessment & Plan
Mr. Wilson is initially admitted to the cardiac ICU under the care of the general cardiology team. The advanced heart failure team has also been consulted to assist with evaluating the patient for potential advanced therapies (left ventricular assist device, heart transplant) in the future. The patient is slowly weaned off intravenous nitroprusside, being switched back to oral afterload reduction with valsartan (160mg twice daily, prior home dose) and transferred to the general cardiology floor. The patient is also switched back to rivaroxaban, following Swan-Ganz catheter removal. All other home medications are resumed except metformin. Furosemide has been switched back to oral (patient currently at 161 pounds).

On hospital day #4, the general cardiology attending asks you to do a thorough review of the patient's case and make recommendations for the patient's CHF, CAD, and DMII therapies, as well as any other recommendations you may have related to this patient's care.

Team #_____

Pharmacist's Care Plan

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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).

ASHP Clinical Skills Competition - Pharmacist's Care Plan

Evaluated for competition

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

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Evaluated for competition

Problem Identification and Prioritization with Pharmacist's Care Plan

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters

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Problem Identification and Prioritization with Pharmacist's Care Plan

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters

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Problem Identification and Prioritization with Pharmacist's Care Plan

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Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters

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Problem Identification and Prioritization with Pharmacist's Care Plan

Health Care Problem	Priority	Recommendations for Therapy	Therapeutic Goals & Monitoring Parameters

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2019
ASHP Clinical Skills Competition℠
NATIONAL CASE ANSWER KEY

ASHP Clinical Skills Competition - Pharmacist's Care Plan – 2019 National Case Answer Key

Evaluated for competition

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)
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   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
Hyperkalemia	**1**	• Recommend treating patient's hyperkalemia, given changes on EKG, through: ○ Calcium gluconate or calcium chloride 1 gram IV x 1 to enhance membrane stabilization PLUS ○ Insulin (regular) 5-10 (needs to fall within this range) units intravenously, followed by 50 mL of 50% D5W (25 g glucose) AND/OR Albuterol Nebulization 10-20 mg x 1 PLUS ○ Sodium polystyrene 15-30 g orally once, patiromer 8.4 g orally once or sodium zirconium cyclosilicate 10 g orally once ○ **NOTE: Sodium Bicarbonate would not be recommended given patient's most recent elevated bicarbonate level. Furosemide would also not be recommended given recent aggressive diuresis.**	*Therapeutic Goals*: • Reduce potassium levels to prevent cardiac conduction abnormalities *Monitoring Parameters*: • Repeat potassium level at 1-2 hours following acute therapies along with a repeat EKG • Hourly blood glucose monitoring for at least 4-6 hours after the administration of insulin and dextrose • Daily or twice daily monitoring of potassium while hospitalized with a BMP one week after discharge
HFrEF (CHF)	2	• Recommend optimizing patient's current HFrEF regimen: ○ Continue metoprolol and furosemide at current doses	*Therapeutic Goals*:

		○ Transition from valsartan to sacubitril/valsartan 49/51 mg twice daily by mouth and discontinuing valsartan 160 mg twice daily; this should be uptitrated to the 97/103mg dose in 2-4 weeks ○ Order BMP – if normal (K < 5mEq/L), initiate spironolactone 12.5-25 mg once daily by mouth (only if mentioning a plan for continued K+ monitoring/K+ binding therapies); if K not normal may initiate potassium binder (see below for options) and then start spironolactone ▪ Patiromer 8.4 g orally once daily ▪ Sodium zirconium cyclosilicate 10 g orally three times daily ▪ Sodium polystyrene sulfonate 15 g orally once daily • **BONUS:** ○ Digoxin 0.125 mcg daily (Ivabradine not an acceptable answer given patient's atrial fibrillation history) ○ Recommendation for palliative care consult/ICD placement ○ Nutrition consult for dietary recommendations related to hyperkalemia prevention	• Optimize HFrEF regimen to reduce the risk of mortality, hospitalization, and improve quality of life *Monitoring Parameters*: *ARNi* • Transition of ARB to ARNi does not require washout period • BMP at 1 week following discharge (monitoring K+ and SCr) • Decrease dose if K+ remains elevated > 5.5mEq/L Aldosterone antagonist • K+/Scr at 1 week following discharge (monitoring K+ and SCr) • Discontinue therapy if K+ > 5.5 mEq/L Digoxin • Digoxin level at 5-7 days following initiation of therapy (therapeutic level for HFrEF = 0.5-0.9 ng/mL)
Atrial Fibrillation	2	• Recommend modifying current triple antithrombotic regimen as follows: ○ Discontinue aspirin ○ Reduce rivaroxaban dose to 15 mg daily ○ Continue clopidogrel at the current dose	*Therapeutic Goals*: • Optimize anti-thrombotic therapy to minimize the risk of ischemic events while counterbalancing the risk of bleeding events *Monitoring Parameters*: • Patient should be instructed to discuss their anti-thrombotic regimen at their next cardiology appointment as once they hit the one-year mark with clopidogrel it is likely their regimen will be modified once again

Iron Deficiency Anemia	2	• Recommend one of the following intravenous therapies while the patient is hospitalized: o Iron Dextran: test dose of 25mg, followed by 1000mg infusion o Iron Sucrose: 800-1000mg administered over 2-4 daily infusions o Ferumoxytol: 2 separate 510mg infusions o Ferric Carboxymaltose: 750mg day 1, then an additional 750mg 7 days later (total dose of 1500mg) AND • Recommend one of the following outpatient/chronic regimens o Ferrous Sulfate 325mg every other day or once daily o Ferric Gluconate: 0.75 to 1.5mg/kg/day (125mg max dose)	*Therapeutic Goals*: • Replete iron reserves to reduce symptomatology (quality of life) from iron deficiency anemia and reduce the likelihood of re-hospitalization *Monitoring Parameters*: • Patient should be monitored during their initial intravenous infusion for an anaphylactoid type reaction - If history of adverse events with multiple drugs in past could consider pre-medication with diphenhydramine 25-50 mg orally • Repeat iron studies in 3-6 months to assess therapeutic response • Counsel on the GI side effects of oral iron therapy as well as the patient's stool turning dark in color
Diabetes Mellitus Type II	3	• Recommend initiating one of the following agents: o Dapagliflozin 5 mg once daily o Empagliflozin 10 mg once daily o Canagliflozin 100 mg once daily o Liraglutide 0.6 mg once daily subQ injection, may increase to 1.2 mg after one week o Semaglutide 0.25 mg once weekly; after 4 weeks may increase to 0.5 mg once weekly	*Therapeutic Goals*: • Optimize blood glucose control/A1C% to reduce the risk of further cardiovascular disease and sequelae of uncontrolled diabetes *Monitoring Parameters*: General - Repeat Hgb A1C% in 3-6 months - Blood glucose checks 1-2x daily at home *SGLT2s*

			• Ambulatory blood pressure monitoring along with recommendation to maintain hydration • Counsel on the risk of urinary infections and signs/symptoms of ketoacidosis GLP1s • Triglycerides 1-2x year • Counsel on risk of pancreatitis, worsening mood, and suicidal ideation
Hyperlipidemia	3	• Patient's LDL remains uncontrolled (Goal < 70 mg/dL) in lieu of prolonged high-intensity statin therapy o Recommend ezetimibe 10mg once daily (PCSK9 inhibitor would not be appropriate at this juncture unless failed response to ezetimibe)	*Therapeutic Goals*: • Optimize LDL to prevent secondary cardiovascular events and reduce risk of stroke *Monitoring Parameters*: • Fasting lipid profile should be rechecked 4 to 12 weeks after starting therapy and every 3 to 12 months thereafter
Immunizations	3	• Administer appropriate immunizations to the patient either prior to discharge or at follow-up visit o Recommend annual inactivated influenza vaccine o Recommend 1 dose of PCV13 followed by 1 dose of PPSV23 at least 1 year after PCV13, and a second dose of PPSV23 at least 5 years after the first dose of PPSV23 o Recommend Shingrix vaccine	*Therapeutic Goals*: • Prevent potential disease burden and optimize public health through immunizations specific to patient's cardio-metabolic disease *Monitoring Parameters*: • Injection site reactions (local) – redness, swelling, itching, pain • Low grade fever and general malaise to be expected for a few days • Observe patient for at least 15 minutes after being vaccinated • Monitor for signs of anaphylaxis (throat swelling, difficulty breathing)