ASHP CLINICAL SKILLS COMPETITION 2015
PHARMACIST'S PATIENT DATA BASE FORM

Demographic and Administrative Information

Name: James Burns	**Patient ID:** 000503
	Room & Bed: 24 Unit 11 South
Date of Birth: 04/20/1960	**Physician:** Williams
Height: 72 in. / **Weight:** 185 lbs. / **Race:** Caucasian	**Pharmacy:** Walmart
Prescription Coverage	**Religion:** Agnostic
Insurance: Blue Cross/Blue Shield	
Copay: $10 generic; $40 brand	
Cost per month: $250	
Family's Annual Income: $65,000	

Chief Complaint: "I have a fever and chills, my muscles hurt all over, I don't feel like eating, and I was too weak to get out of bed this morning"

History of Present Illness: JB presented to an express medical clinic complaining of progressive muscle pains, intermittent fevers, and loss of appetite on December 1st which he described as feeling like "the flu" that have been persistent for the past 3 weeks. He was treated for what was believed to be acute bronchitis and was prescribed doxycycline 100 mg twice daily for 7 days. His symptoms progressed despite taking the doxycycline as prescribed. Two nights ago he became so weak he was unable to get out of bed to go to the bathroom. In the emergency department, JB presented as somnolent but alert and oriented to person, place, and time. Upon further review of his medical history, JB reported that he was treated two months ago for a dental abscess which was surgically drained. He was prescribed an antibiotic to take prior to the procedure; however, he forgot to have this filled. He was given fluid resuscitation for dehydration and acetaminophen for his fever. He felt slightly better but his fevers have persisted after transfer to the General Medicine Service.

Past Medical History

1. Aortic Stenosis: Mechanical prosthetic valve replacement in 2010
2. Hyperlipidemia x 10 years
3. Depression: Started one year ago due to financial difficulties; improving
4. Periodontal disease/gingivitis: full set of teeth remains intact

Allergies/Intolerances:

Amoxicillin – "trouble breathing"
Citalopram – GI upset

Outpatient Drug Therapy

Drug Name/Dose/Strength/Route	Prescribed Schedule	Duration Start–Stop Dates	Prescriber
1. Warfarin 5 mg PO	Daily at 6PM	01/12/2010 – Present	Dr. Carter
2. Aspirin 81 mg PO	Daily AM	01/12/2010 – Present	Dr. Carter
3. Simvastatin 10 mg PO	Daily HS	04/03/2004 – Present	Dr. Williams
4. Sertraline 100 mg PO	Daily AM	05/03/2013 – Present	Dr. Williams
5. Ibuprofen 200 mg PO	OTC	Has been taking 2 pills 3 times a day since illness onset, used to take PRN	None

Medication History
JB has prescriptions from his cardiologist and his primary care physician.
Adherence/dosing issue: He is adherent to his morning medications but sometimes forgets to take simvastatin at bedtime. He is adherent to recommended warfarin diet.

Surgical History
Mechanical aortic valve replacement in 2010
Multiple dental surgeries due to poor dentition
Tonsillectomy age 10

Family History
Father died of myocardial infarction at 75
Mother still alive with a history of osteoporosis
No siblings

Social History
Alcohol intake: Drinks roughly 3 beers per week
Tobacco: 1 PPD
Illicit drugs: Negative
Employment: Recently laid off; worked as an accountant previously
Married for 20 years

Vaccination history
Up to date on all vaccinations; has never received the influenza vaccine

ROS
Positive for muscle pain, fatigue, chills, and loss of appetite resulting in 15 lb unintentional weight loss

Physical Exam
General: Middle-aged male in moderate distress
HEENT: PERRLA, EOMI, oropharynx reveals poor dentition but is clear without lesions
Chest: CTA bilaterally, good air movement in all lobes
Cardiovascular: Tachycardia, regular rhythm, new regurgitant murmur, no rubs or gallops
Abdomen: Soft, non-tender, non-distended
Genitourinary: WNL
Extremities: Janeway's lesions on the hands, splinter hemorrhages under the nails, and petechiae on the bilateral lower extremities
Neuro: AAO x 3; CNs II-XII grossly intact
Psych: Mood: "good"; Affect: congruent with mood; Behavior: appropriate

Vital signs
HR: 110 bpm
RR: 16 bpm
BP: 125/85 mmHg
Temp: 102° F
Pain score: 2/10

Labs

	ADD DATE
Metabolic Panel	
Na (mEq/L)	134
K (mEq/L)	3.6
Cl (mEq/L)	104
CO_2 (mEq/L)	26
BUN (mg/dL)	17
SCr (mg/dL)	0.7
Glucose (mg/dL)	95
Calcium (mg/dL)	8.5
Phosphorus (mg/dL)	3.3
Magnesium (mEq/L)	1.8
Albumin (g/dL)	2.8
AST (IU/L)	20
ALT (IU/L)	19
Total bili (mg/dL)	0.8
CBC	
WBC (million/mm^3)	16.5
Hgb (g/dL)	9.0
Hct (%)	28.5
Plt (K/mm^3)	115
Other	
ESR	119
CRP	16.2
PT (seconds)	14
INR	1.6
aPTT (seconds)	23.3
A1c	5.6%
Total Cholesterol	260 mg/dL
LDL	190 mg/dL
HDL	38 mg/dL
Triglycerides	265 mg/dL

Blood Cultures:

Set 1: Peripheral blood – right arm

- Gram Stain: Gram positive cocci in pairs and chains from both aerobic and anaerobic bottles
- Culture: Streptococcus mitis from both aerobic and anaerobic bottles

    - **STREPTOCOCCUS MITIS**

	MIC (mcg/mL)
Ceftriaxone	0.125
Penicillin	0.25
Vancomycin	1

Set 2: Peripheral blood – left arm

- Gram Stain: Gram positive cocci in pairs and chains from both aerobic and anaerobic bottles
- Culture: Streptococcus mitis from aerobic and anaerobic bottles – Sensitivity on previous specimens

Tests

Chest X-ray: No acute abnormalities
CT chest: Unremarkable
EKG: Sinus pattern; no ischemic changes
Transesophageal Echo: Severe regurgitation and vegetation on aortic valve leaflet (1cm/1cm)

Current Drug Therapy

Drug name/dose/strength/route	Prescribed schedule	Start date	Indication
Moxifloxacin 400 mg IV	Every 24 hours	Since admission (2 days)	Empiric antibiotic coverage
Oseltamivir 75 mg PO	Every 24 hours	Since admission (2 days)	Empiric antiviral coverage
0.9% Sodium Chloride IV	Continuous infusion at 75 mL/hour	Since admission (2 days)	Maintenance fluids
Simvastatin 10 mg PO	Every 24 hours	Since admission (2 days)	Hyperlipidemia
Aspirin 81 mg PO	Every 24 hours	Since admission (2 days)	Cardiovascular event prevention
Sertraline 100 mg PO	Every 24 hours	Since admission (2 days)	Depression

Patient Narrative

JB is admitted to a general medical ward and diagnosed with infective endocarditis after meeting 2 of the major Modified Duke criteria. He does not have neurologic or CNS complications and will not be undergoing invasive surgical procedures for this infection. He will be managed medically with antibiotic therapy. He was started on empiric oseltamivir and moxifloxacin upon admission for a presumptive respiratory infection, which has now been ruled out. Today (two days after his admission) the very busy microbiology lab reported the minimum inhibitory concentrations (MIC) without interpretation for the organism growing in JB's blood culture. The first-year medical resident noticed the lack of interpretation for these MIC values and tried to call the microbiology lab who said that the technologist had left for the day. The medical resident then 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.

Evaluated for competition

ASHP Clinical Skills Competition - Pharmacist's Care Plan - 2015 Final 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	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Infective Endocarditis of Prosthetic Aortic Valve	1	• Eradicate infection • Reduce the risk of morbidity and mortality from infection • Prevent the development or worsening of short and long-term sequeale (e.g. septic emboli to lung, brain, spleen or other organs)	• Discontinue oseltamivir and moxfloxacin • Begin antibiotic coverage for Viridans Group Streptococci relatively resistant to penicillin with: o Vancomycin 30 mg/kg per 24 h IV in 2 equally divided doses based on actual body weight (1250 mg – 1500 mg given every 12 hours) o Goal serum trough concentration is 15-20 mg/L ---PLUS--- o Gentamicin 3 mg/kg IV every 24 hours based on actual body weight (250 mg every 24 hours) (per IDSA guidelines) o Goal peak: 3-4 mg/L o Goal trough: < 1 mg/L Acceptable alternative dosing: o Gentamicin 1 mg/kg IV every 8 hours based on actual body weight (85-90 mg every 8 hours) • Recommended duration of therapy is 6 weeks for both antibiotics • Recommend acetaminophen for fever control. NSAIDs should be avoided because of patient's cardiac history and interaction with warfarin	Efficacy: • Daily CBC to monitor WBC • Daily blood cultures until clearance is documented then blood cultures periodically • Resolution of infection (e.g. normalization of temperature, resolution of myalgias, resolution of vegetation on imaging) Safety: • S/sx of vancomycin hypersensitivity and other adverse effects (e.g. "Redman syndrome", flushing, itching of trunk or extremities) • Monitor for anaphylactic reaction to antibiotics (e.g. decreased O_2 saturation on pulse oximetry, tongue swelling) • Monitor trough serum vancomycin concentration obtained just prior to the next dose at steady-state conditions (~30 minutes prior to fourth dose) and adjust doses accordingly

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
				• Daily BMP to monitor renal function while on vancomcyin and an aminoglycoside • Monitor for infusion reactions and hypersensitivity to aminoglycosides (e.g. rash, extravasation) • Audiology examination at baseline and periodically while on aminoglycoside therapy • Monitor for ototoxicity with aminoglycosides (e.g. tinnitus, dizziness, buzzing or hissing in inner ear)
Subtherapeutic INR	**2**	• Prevention of clot formation in patients with prosthetic heart valves	• Restart warfarin and increase warfarin dose to a goal INR of 2-3 (goal of 2.5-3.5 is not acceptable because patient does not meet "high-risk" criteria for patients with a mechanical aortic valve) • It is appropriate to recommend bridging with an institution-specific protocol for heparin drip dosing OR recommend bridging with enoxaparin 85 mg subcutaneously every 12 hours until the INR is therapeutic for 2 consecutive days • <u>It is acceptable to use either of the following:</u> o Use of an institution-specific protocol for titrating warfarin based on daily INRs while patient is an inpatient --OR— o Increase by 10%-15% per week: ▪ Patient is currently taking 5 mg/day = 35 mg/week; a 10%-15% increase would be 38.5-40.25 mg/week or 5.5-5.75 mg/day (can be given as 5 mg and 6 mg rotating every other day or any other regimen that results in roughly ~38-40 mg/week) • Continue aspirin 81 mg daily	• Obtain daily PT with morning labs until INR goal is stable within therapeutic range for ≥ 2 days, then can monitor less frequently (i.e. e.g. twice a week) • Obtain CBC daily • Monitor for signs/symptoms of stroke while INR is subtherapeutic (i.e.e.g. blurred vision, slurred speech, loss of motor coordination) • Monitor for signs/symptoms of clotting or embolic events (i.e.e.g. redness, swelling, pain in extremities, altered lung function on pulse oximetry) • Monitor for adverse events of warfarin (i.e.e.g. bleeding)

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			• Counsel patient about diet (e.g. green vegetables, avoiding alcohol), compliance, and signs of adverse events such as bleeding which may manifest as bruising, nosebleeds, or bleeding of the GI or GU tracts • Counsel patient to avoid ibuprofen or any OTC NSAIDs while on warfarin • It is not appropriate to recommend other oral anticoagulants as these do not hold approval for patients with mechanical valves	
Periodontal Disease/gingivitis	**2**	• Prevention of gum infection • Improve and maintain oral hygiene	• Consultation to dental medicine evaluation • Consider prescription antimicrobial mouthwash such as: o Chlorhexidine gluconate 0.12% swish and spit 15 ml orally twice a day • Brush and floss every day to remove bacteria • Regular professional cleaning and dental checkups at least once a year • Antimicrobial prophylaxis with dental procedures is indicated for patients with prosthetic cardiac valves o If stated, clindamycin 600 mg as a single dose before procedures would be drug of choice for PCN-allergic patients (anaphylaxis) • Counsel patient about importance of adherence to dental prophylaxis	• Monitor for resolution of disease (e.g. decreased swelling and pain around gums) • Monitor for compliance to brushing/flossing • Monitor for compliance to prophylaxis when undergoing dental procedures
Tobacco Use	**2**	• Cessation of tobacco smoking	• Address 5-A's of cessation: o Ask about tobacco use o Advise to quit o Assess willingness and readiness to quit (see notes) o Assist with quitting 1. Set a quit plan 2. Address barriers 3. Recommend treatment options: First line: Cognitive behavorial therapy + pharmacologic agent Pharmacologic agents options: 1) Combination nicotine replacement (ANY):	• Monitor for signs and symptoms of nicotine withdrawal (e.g. blood pressure and heart rate, anxiety, headaches, insomnia) • Adverse effects of medications chosen: o Patch – skin irritation, nightmares o Gum – dysguesia o Nasal spray/inhaler – nasal/throat burning and irritation, headache, dyspepsia, rhinitis

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			• Nicotine patch 21 mg x 4-6 weeks, then 14 mg x 2 weeks, then 7 mg x 2 weeks • Nicotine gum 4mg Q 1 hr x 6 weeks then PRN up to 12 weeks (maximum 24 pieces/day) • Nicotine nasal spray 1-2 sprays/hour; do not exceed 10 sprays per hour (maximum 80 sprays per day) • Nicotine 4 mg lozenge Weeks 1-6: q1hr Weeks 7-9: q2hr Weeks 10-12: q4hr (max 20 per day) • Nicotine inhaler 6-16 cartridges per day --OR— 2) Centrally acting medications • Bupropion SR 150 mg PO daily x 3 days then 150 mg twice daily • --OR— • Varenicline 0.5 mg/day for 3 days, then 0.5 mg twice a day for 4 days, then 1 mg twice a day • Arrange follow-up support	o Lozenge – nausea, hiccups, heartburn o Inhaler – cough o Bupropion – blood pressure, heart rate, mood changes, GI upset, confusion, headache o Varenicline – insomnia, vivid dreams, ophthalmic effects, GI upset, psychiatric events
Hyperlipidemia	**3**	• Prevent atherosclerotic cardiovascular disease • Promote cardiovascular health	• Therapeutic lifestyle changes targeting total fat 25-35% of calories with saturated fat < 7%; < 200 mg/day cholesterol, Dietary fiber 20-30 grams per day as can tolerate • Estimate 10-year ASCVD risk with Pooled Cohort Equations: o Calculated risk is >7.5% which qualifies him for moderate-high intensity statin therapy o Based on this, increase simvastatin to 20-40 mg daily o <u>All acceptable choices:</u>	• Fasting lipid panel within 4 to 12 weeks of dose adjustment then every 3 to 12 months as clinically indicated to monitor for response • Indicators of response and adherence: o High-intensity statin therapy reduces LDL–C approx. ≥50% from the untreated baseline. o Moderate-intensity statin therapy reduces LDL–C approx. 30%

<table>
<tr><th>Health Care Problem</th><th>Priority</th><th>Therapeutic Goals</th><th>Recommendations for Therapy</th><th>Monitoring Parameters and Endpoints</th></tr>
<tr><td></td><td></td><td></td><td><table><tr><th>High-Intensity Statin Therapy</th><th>Moderate-Intensity Statin Therapy</th></tr><tr><td>Atorvastatin (40)–80 mg
Rosuvastatin 20 (40) mg</td><td>Atorvastatin 10 (20) mg
Rosuvastatin (5) 10 mg
Simvastatin 20–40 mg
Pravastatin 40 (80) mg
Lovastatin 40 mg
Fluvastatin XL 80 mg
Fluvastatin 40 mg bid
Pitavastatin 2–4 mg</td></tr></table>
Counsel patient on adherence to medication, provide ways to remember to take medication such as pillbox, alarms, notes, etc.
It is acceptable to recommend taking statin in morning with other medications if patient absolutely cannot be compliant</td><td>to <50% from the untreated baseline.
Adverse effects: Myopathy, abdominal pain, headache
Periodic liver function tests may be considered
Creatinine kinase may be considered periodically</td></tr>
<tr><td>Depression</td><td>3</td><td>Eliminate or reduce symptoms of depression such as helplessness, depressed mood, appetite, energy and sleep
Improve quality of life</td><td>Continue sertraline 100 mg PO daily
Recommend psychotherapy in combination with pharmacotherapy
Recommend relaxation and exercise</td><td>Reassess need for continuation of treatment at next outpatient visit with primary care physician
Monitor for adverse effects of sertraline (e.g. GI upset, dizziness, insomnia, headache, decreased libido)</td></tr>
<tr><td>Vaccinations/health Maintenance</td><td>3</td><td>Reduce the incidence of vaccine-preventable diseases
Maintain healthy behaviors
Avoid polypharmacy</td><td>Administer inactivated influenza vaccine during hospitalization while providing Vaccine Information Sheet (VIS) and ensuring proper documentation is met
Counsel patient on exercise and healthy diet
Counsel patient to avoid alcohol use</td><td>Monitor for injection site reactions (e.g. pain, swelling, erythema), malaise, arthralgia
Ensure follow-up with local pharmacist and other health care providers to prevent polypharmacy and improve adherence to medications</td></tr>
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