ASHP CLINICAL SKILLS COMPETITION 2009

PHARMACIST'S PATIENT DATA BASE FORM

Demographic and Administrative Information			
Name: SC		Patient ID: 2989031	
Address: 2087 Bentley Ave		Room & Bed: Room 1064/General Medicine	
Charlotte, NC		Physician: Graham	
Date of Birth: 12/17/1973		Pharmacy: n/a	
Height: 163cm (5'4") Weight: 54 kg		Race: African American	
Gender: Female		Religion: None specified	
History of Present Illness		**Vitals & Other Tests 4/4/09**	**Vitals & Other Tests 4/5/09**
You are on rounds with the Internal Medicine team on 4/5/09 outside the patient's room. Dr Graham, the attending physician, has diagnosed this patient with *Pneumocystis jirovecii* pneumonia and esophageal candidiasis. Dr Graham believes SC's pneumonia is improving. SC will not be started on antiretroviral medications at this time. Nurse Jones steps out of the patient's room and informs the team that the patient has become increasingly anxious overnight. Dr Graham would like recommendations from the pharmacist for SC. The information below contains the patient's history, physical exam, laboratory data, and other information up to this point. SC presented to the emergency department on 4/4/2009 @ 10PM with a cc of cough and chills and panic-like agitation. She was also experiencing moderate hand tremor, diaphoresis, nausea and itching with a sensation of bugs crawling on her skin. She has known HIV disease but is currently not on prophylaxis or antiretroviral therapy. Two weeks prior to admission she began to note the onset of a dry, nonproductive cough, intermittent chills, anorexia, and then progressive exertional dyspnea. She also complains of severe mouth and throat pain, as such she refuses to eat or drink. She was admitted her to the general medicine service, from the emergency department, for further inpatient management.		BP mmHg 170/95 Pulse bpm 130 Temp Tmax 102.2°F RR breaths/min 26 O2 Sat 84% RA <u>ABG:</u> pH 7.45 $PaCO_2$ mmHg 35 PaO_2 mmHg 65 HCO_3 mmol/L 24	BP mmHg 165/92 Pulse bpm 120 Temp Tmax 99 °F RR breaths/min 26 O2 Sat 92% RA

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PHARMACIST'S PATIENT DATA BASE FORM (Cont.)

Past Medical History		**Chemistry and CBC**	
		4/4/09	**4/5/09**
HIV diagnosed in 2006 AIDS Hepatitis C Alcohol withdrawal related "seizures" (4/2006 & 12/2008) Polysubstance abuse Gravida 4 Para 0		Na mmol/L 136 K mmol/L 3.5 Cl mmol/L 103 CO_2 mmol/L 24 BUN mg/dL 4 SCr mg/dL 0.8 Gluc mg/dL 143 Ca mg/dL 8.4 Mg mg/dL 2.0 Phos mg/dL 0.9 WBC K/µL 3.4 Hgb gm/dL 10.0 HCT % 28.6 Plts K/µL 260 Neut % 87 Lymph % 2 Mono % 3 Bands % 8 Eos % 0 Baso % 0 Total Protein g/dL 7.0 Albumin g/dL 3.1 Alk Phos units/L 205 AST units/L 158 ALT units/L 113 Tot bili mg/dL 0.5 β hCG negative LDH International Units/L 460 Blood EtOH mg/dL 200	Na mmol/L 138 K mmol/L 3.6 Cl mmol/L 104 CO_2 mmol/L 27 BUN mg/dL 5 SCr mg/dL 0.9 Gluc mg/dL 109 Ca mg/dL -- Mg mg/dL -- Phos mg/dL -- WBC K/µL 3.0 Hgb gm/dL 10.4 HCT % 29.7 Plts K/µL 240 Albumin g/dL 2.7 Alk Phos units/L 206 AST units/L 128 ALT units/L 124 Tot bili mg/dL 0.4 Urine Drug Screen Amphetamines – Negative Barbiturates – Negative Benzodiazepines – Positive Cocaine – Negative Marijuana – Positive Opiates – Negative Blood EtOH mg/dL 0
Family History			
Unknown			

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ASHP CLINICAL SKILLS COMPETITION
PHARMACIST'S PATIENT DATA BASE FORM (Cont.)

<table>
<tr><td>Social History (from outpatient chart)</td><td></td><td>Cultures</td></tr>
<tr><td rowspan="3">Tobacco: denies
ETOH: drinks approximately twelve 12 oz cans of beer per day, she reports that she has not had any beer in the 12 hours before presenting to the emergency department due to severe mouth and throat pain and difficulty swallowing.
Illicit Drugs: Past history of occasional marijuana, last used about 2 weeks ago; crack cocaine, last used about 1 month ago
Caffeine: denies
Occupation: unemployed
Status: divorced/has boyfriend who is HIV negative (last HIV test 1 month ago).
Children: None (states she can not afford her birth control)
Physical Activity: denies
Diet: Nothing notable</td><td></td><td>4/5/09
Blood Culture X2 No Growth
AFB Smear X 3 No Growth
AFB Culture No Growth
Fungus Culture No Growth
Stool Culture No Growth
Sputum Gram Smear: <10 epithelial cell seen/LPF; <10 PMN/LPF, 1+ Gram Positive Cocci; 2+ Gram Positive Rods, 1+ Gram Negative Rods, 1+ Yeast
Pneumocystis DFA Stain 1+ Pneumocystis jirovecii</td></tr>
<tr><td></td><td>Immunology 4/5/09</td></tr>
<tr><td></td><td>Hep A Reactive
Hep B Surface Ag Nonreactive
Hep B Core Total Ab Nonreactive
Hep C Virus Ab, Riba 3.0 Positive
HIV 1 RNA 3,531,673 copies/ml
CD4 2 cells/mm^3
PPD 4/5/09 @ 0800 Pending</td></tr>
<tr><td>Procedures</td><td></td><td>X-ray</td></tr>
<tr><td></td><td></td><td>Chest (taken in emergency department on 4/4/09) –
Reading: diffuse interstitial hilar infiltrates with ground glass appearance most prominent in the right mid lung field
Interpretation: consistent with Pneumocystis jirovecii pneumonia
Chest (4/5/09) – unchanged.</td></tr>
<tr><td colspan="3">Physical Exam 4/5/09</td></tr>
<tr><td colspan="3">General: Thin female in acute distress with shortness of breath and obvious agitation</td></tr>
<tr><td colspan="3">Skin: Moist; no lesions, tumors or moles; no palmar erythema</td></tr>
<tr><td colspan="3">HEENT: Normocephalic; atraumatic; deferred remainder of exam due to agitation; sclerae are anicteric</td></tr>
<tr><td colspan="3">Chest: Tachypneic, labored breathing; decreased breath sounds in the right middle lung field</td></tr>
<tr><td colspan="3">CV: Regular rhythm; tachycardic; no murmurs, gallops, or rubs</td></tr>
<tr><td colspan="3">Abd: Soft, tender to palpation, moderately distended; (+) bowel sounds; liver span enlarged at 2 cm below right costal margin; no splenomegaly; no spider angiomata</td></tr>
<tr><td colspan="3">Ext: Moves all extremities; (+) tremor in both hands</td></tr>
</table>

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ASHP CLINICAL SKILLS COMPETITION
PHARMACIST'S PATIENT DATA BASE FORM (Cont.)

Allergies/Intolerance's		**Prescription Coverage**	
No known drug allergies		Insurance: None	
		Copay: not applicable	
		Cost per month: not applicable	
		Home Pharmacy: none known	
Current Scheduled Drug Therapy			
Drug Name/Dose/Strength/Route	Prescribed Schedule	Duration Start–Stop Dates	Indication
1. Ceftriaxone 1gm IV	Q24 hours	4/4/09 – present	Empiric for community acquired pneumonia
2. Azithromycin 500mg PO	Q24 hours	4/4/09 – present	Empiric for community acquired pneumonia
3. Sulfamexthoxazole/Trimethoprim 800-160mg PO (1 tab)	Q12 hours	4/4/09 – present	Treatment of *Pneumocystis jirovecii* pneumonia
4. Nystatin suspension 500,000 units PO	Q8 hours	4/4/09 -- present	Treatment for esophageal candidiasis
5. Enoxaparin 40mg SQ	Q24 hours	4/4/09 -- present	Venous Thromboembolism prophylaxis
6. Omeprazole 20mg PO	Daily	4/4/09 -- present	--
7. Multivitamin 1 tab PO	Daily	4/4/09 -- present	Vitamin replenishment
8. Drospirenone/Ethinyl estradiol 1 tab PO	Daily	4/4/09 -- present	Birth control
9. Tuberculin PPD 0.1ml ID	Once	Once	Testing for Tuberculosis
10. Lorazepam 1mg PO	Once	Once in ED	Agitation
11. Lorazepam 1mg IV	Once	Once @ 4AM 4/5/2009	Agitation
Current PRN Drug Therapy			
1. Acetaminophen 500mg PO/PR 1-2 tabs	Q4 hours prn pain/fever	4/4/09 -- present	Mild pain/fever
2. Albuterol Inhaler 1-2 puffs	Q4 hours prn	4/4/09 -- present	Dyspnea
3. Hydrocodone 5mg/Acetaminophen 500mg 1-2 tabs	Q4 hours prn moderate to severe pain	4/4/09 -- present	Moderate to severe pain
4. Ipratropium Inhaler 2 puffs	Q4 hours prn	4/4/09 -- present	Dyspnea
5. Ondansetron 4mg IV	Q6 hours prn nausea	4/4/09 -- present	Nausea
6. Ondansetron 4mg PO	Q6 hours prn nausea	4/4/09 -- present	Nausea
7. Lorazepam 1mg PO	Q6 hours prn anxiety	4/4/09 -- present	Agitation
Medication History			
Patient is non-adherent with medicine at home. She has a prescription for Yaz® (drospirinone/ethinyl estradiol) at home but can not afford this medicine, and thus does not take it.			

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Evaluated for competition

ASHP Clinical Skills Competition - Pharmacist's Care Plan

Problem Identification and Prioritization with Pharmacist's Care Plan

Team # _____

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
Acute Alcohol Withdrawal	**1**	• Prevent acute alcohol induced delirium tremens • Prevent Wernicke's encephalopathy • Prevent autonomic instability	• Lorazepam 1mg IV q6 hours • Lorazepam 0.5mg IV q2 hours prn (adjunctive tx to Lorazepam) • Enalaprilat 1.25mg IV q2 hours prn SBP > 175 (change to Clonidine 0.1mg PO) • Haloperidol 2mg IV q2 hours prn severe agitation or hallucinations (adjunctive tx to Lorazepam) • Initiate maintenance fluid (1 liter bag daily) with Dextrose 5%/0.45% NS 1 liter with Thiamine 100mg-200mg/Folic Acid 1mg/MVI/Magnesium 2gm x 3 days • Follow "Management of alcohol withdrawal delirium. An evidence-based practice guideline." (2004)	• Change to oral therapy when thrush pain subsides • Vitals (BP/HR) q 4 hours x 72 hours then q shift • Monitor for signs/symptoms of withdrawal: tremor,diaphoresis,nausea/ vomiting, fever, agitation, confusion, sleeplessness, hallucinations, seizure (Severity Assessment Scale, *American Journal of Critical Care*, January 1995, Vol. 4(1), 67 –OR-- Revised Clinical Institute Withdrawal Assessment for Alcohol (CIWA-Ar) Scale. Br J Addict 1989;84:1353-7) • Chem 7, Magnesium, Phosphorus daily x 72 hours

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Pneumocystis *jiroveci* pneumonia	**2**	• Prevent mortality • Appropriate treatment for opportunistic infection • Decrease hypoxemia	• Trimethoprim/Sulfamethoxazole 16ml (256mg TMP/1280mg SMZ) IV q6 hours (19mg/kg/day TMP adjusted for ease of compounding) • Discontinue oral TMP/SMZ subtherapeutic dosing. Recognizing the need for IV medication is key here. • Discontinue Ceftriaxone and Azithromycin • Prednisone oral solution 40mg PO BID x 5 days then 20mg PO BID x 5 days then 20mg daily for 11 days OR Methylprednisolone 32 mg IV BID X 5 days (~64mg daily) with taper. • Follow Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents - April 10, 2009 (p.6)	• Change to oral therapy when thrush pain subsides • Test for G6PD deficiency • Chem 7 (potassium, BUN, creatinine) daily • CBC daily (w/ ANC) • LFTs daily • Signs/symptoms of allergic reaction (rash, pruritis) • Maintain adequate hydration • Urine output, q shift • O2 Saturation q shift • GI upset, emotional instability, glucose w/ Steroid

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Severe oral and esophageal thrush	**2**	• Appropriate treatment of candidiasis	• Convert all medicine to IV therapy when possible (solutions/suspensions may be appropriate) • Fluconazole 200mg IV daily x 14-21 days • Discontinue Nystatin • Follow Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents - April 10, 2009 (p.46)	• Change to oral therapy when thrush pain subsides
Pain Management	**2**	• Improve pain relief/minimize pain • Prevent Acetaminophen toxicity	• Viscous Lidocaine/Maalox 10ml po q6 hours prn pain • Morphine 2mg IV q6 hours as needed for mild to moderate (esophageal) pain. • Morphine 6mg IV q6hours as needed for severe (esophageal) pain. • Discontinue Hydrocodone/Acetaminophen and Acetaminophen products	• Pain assessment, including pain Score (1-10 scale), pain intensity, pain relief, daily • Quality of life measurement daily • Change to oral therapy when thrush pain subsides
Electrolyte Management	**2**	• Replenish electrolytes • Prevent re-feeding syndrome	• Replace phosphate with Sodium Phosphate 0.24mmol/kg over 6 hours – 13 mmol Sodium Phosphate in 250ml 0.9NS IV over 6 hours. Repeat x 1 if needed	• Chem 7, Magnesium, Phosphorus daily x 72 hours

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Discharge Planning/Patient Education	**2 OR 3**	• Ensure patient can obtain medicine • Establish a pharmacy home • Prevent inpatient readmission due to non-adherence • Ensure all discharge medications have an indication	• Contact social worker to enroll patient in NC Medicaid • Determine pharmacies that are in close proximity to patients home and give patient options for a "pharmacy home" • Contact chosen community pharmacist for continuity of care, medication reconciliation and comprehensive medication review.	
Opportunistic Infection Prophylaxis	**3**	• Appropriate primary and secondary prophylaxis for opportunistic infections	• Patient needs primary prophylaxis for MAC and Toxoplasmosis: Azithromycin 1200mg q week. TMP/SMZ will cover Toxoplasmosis prophylaxis. • PCP prophylaxis TMP/SMZ 1 DS tab daily (after 21 days of treatment therapy) • Follow Follow Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents - April 10, 2009	• Chem 7, CBC q 3 months

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Contraception/Safe sexual practices	**3**	• Assure pregnancy is prevented • Assure education of safe sexual practice	• Discontinue YAZ in the hospital due to risk of hyperkalemia (with TMP/SMZ) • Medroxyprogesterone (Depo-Provera ® 150mg IM every 3 months. OR • Ethinyl Estradiol and Norethindrone 28-tablet package-1 tablet daily without interruption OR • Ethinyl Estradiol and Norelgestromin (Ortho Evra®) - Apply one patch each week for 3 weeks (21 total days); followed by one week that is patch-free. Each patch should be applied on the same day each week ("patch change day") and only one patch should be worn at a time. No more than 7 days should pass during the patch-free interval. OR • Ethinyl Estradiol and Etonogestrel (Nuvaring®) - One ring, inserted vaginally and left in place for 3 consecutive weeks, then removed for 1 week. A new ring is inserted 7 days after the last was removed (even if bleeding is not complete) and should be inserted at approximately the same time of day the ring was removed the previous week.	• Hypercoagulability risk • Side effects: menstrual irregularities, weight changes, headache • Counsel on proper use of contraceptives • Patch or Ring products may be confusing to use for patient. Close follow-up necessary.

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Polysubstance Abuse (Alcohol/Cocaine/THC)	**3**	• Prevent alcohol/cocaine/THC withdrawal • Reduce morbidity/mortality	• Psych consult • Suggest counseling at each follow-up visit	
Antiretroviral Therapy	**3**	• Reduce morbidity/mortalty from HIV related disease	• Although she has AIDS stage HIV, SC will not likely be started on antiretroviral therapy until she has issues such as substance abuse, adherence, and reason for her acute inpatient admission resolved. • Patient should be referred for HIV follow-up at an appropriate outpatient setting	• HIV viral load and CD4 count every 3 months • CBC w/ diff every 3 months • Chem 7 every 3 months • Tox Screen every 3 months or PRN

Note to the local judges:

The Pharmacist Care Plan has been constructed to be as exhaustive as possible. Judges for the Clinical Skills Competition are experts in the field of clinical pharmacy and will have insights into this case that could not be accounted for in a feasible manner. Thus, as a topic expert, if you identify a drug related problem that we did not account for, please feel free to judge the student's responses based on your best judgment. We can envision industrious students listing "level 3" problems such as: outpatient vaccinations, outpatient cancer screenings, patient literacy assessments, domestic violence assessments, etc. Please use you discretion in judging these points in the context of the larger case.

Optimal Medication Plan for Inpatient Admission

Current Scheduled Drug Therapy			
Drug Name/Dose/Strength/Route	Prescribed Schedule	Duration Start–Stop Dates	Indication
1. Lorazepam 2mg IV	Q6 hours	HD #2 - present	Prevent acute alcohol withdrawal/DTs
2. Fluconazole 200mg IV	Q 24 hours	HD #2 - present	Severe oral/esophageal thrush
3. Sulfamexthoxazole/Trimethoprim 16ml in 500ml D5W (256mg TMP/1280mg SMZ) IV	Q6 hours	HD #2 – present	PJP Pneumonia treatment
4. Prednisone solution 40mg PO	BID	HD #2 – present (x 5 days)	PJP Pneumonia treatment for PaO2<70 on admission ABG
5. Enoxaparin 40mg SQ (a change to Heparin 5000 units SQ q8 hours may be acceptable).	Q24 hours	HD #1 -- present	VTE prophylaxis
6. Sodium Phosphate 16 mmol/250 0.9NS IV	Once (over 6 hours)	HD #2 Once	Phosphate replenishment/prevent refeeding syndrome
7. D5W/0.45% Saline IV with Thiamine 100mg/Folic Acid 1mg/MVI	50ml/hour	HD #2 – present (x 3 days total)	Thiamine/Dextrose – Prevent Wernicke's Encephalitis/Vitamin replenishment
8. Tuberculin PPD 0.1ml SC	Once	HD #1 Once	
Current PRN Drug Therapy			
1. Viscous Lidocaine/Maalox 10ml PO (swish/swallow)	Q4 hours prn	HD #2 – present	Pain associated with oral/esophageal thrush
2. Albuterol Inhaler 1-2 puffs	Q4 hours prn	HD #1 -- present	Wheezing
3. Lorazepam 1mg q2 hours	Q2 hours prn	HD #2 – present	Mild/Moderate agitation/breakthrough
4. Haloperidol 2mg IV	Q2 hours prn	HD #2 -- present	Severe agitation/hallucinations
5. Enaprilat 1.25mg IV	Q2 hours prn	HD #2 – present	SBP > 175
6. Morphine 2mg IV	Q6 hours prn	HD #2 -- present	Mild –moderate pain associated with oral/esophageal thrush
7. Morphine 6mg IV	Q6 hours prn	HD #2 -- present	Severe pain associated with oral/esophageal thrush

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