

NATIONAL CASE

**ASHP CLINICAL SKILLS COMPETITION 2014
PHARMACIST'S PATIENT DATA BASE FORM**

Demographic and Administrative Information	
Name: Rose Larkin	Patient ID: 00078162
	Room & Bed: ED-Room 67
Date of Birth: 11/13/1932	Physician: Fraser
Height: 65 in; Weight: 137 lbs, Race: Caucasian	Pharmacy: Rite Aid
	Religion: Catholic
Prescription Coverage	
Insurance: Anthem	
Copay: \$10 generic, \$25 brand	
Cost per month: n/a	
Family's Annual Income: \$54,000	

Chief Complaint: Altered mental status (AMS), neck pain

History of Present Illness

RL was brought to the emergency department from home this morning (12/7/14) by her daughter who stated: "My mother has been very confused since she woke up. I'm not sure if it's all of her medications or if something else is wrong." The daughter reports that RL complained of neck pain, headache, and nausea/vomiting prior to leaving for the hospital. RL has no recent hospitalizations. The only identifiable sick contacts include RL's granddaughter who she babysat 5 days ago. As the ED physician is examining RL, she has a tonic-clonic seizure which resolved with the administration of 4 mg IV lorazepam. She is subsequently intubated due to her AMS and concern for her ability to protect her airway.

Past Medical History

Gastroesophageal reflux disease (GERD)
Heart failure (HF) NYHA Class II
Seasonal allergic rhinitis

Allergies/Intolerances: Sulfa drugs (rash)

Outpatient Drug Therapy			
<i>Drug Name/Dose/Strength/Route</i>	<i>Prescribed Schedule</i>	<i>Duration Start–Stop Dates</i>	<i>Prescriber</i>
1. Diphenhydramine 25 mg (OTC)	2 capsules QHS	9/1/2014-present	N/A
2. Ranitidine 150 mg (OTC)	1 tablet BID	12/25/2013-present	Dr. Walker
3. Cetirizine 10 mg (OTC)	1 tablet daily	5/1/2012-present	Dr. Johnson
4. Metoprolol succinate 50 mg	1 tablet daily	5/30/2008-present	Dr. Walker
5. Aspirin enteric coated 81 mg	1 tablet daily	5/30/2008-present	Dr. Walker
6. Pantoprazole 40 mg	1 tablet daily	3/1/2006-present	Dr. Johnson

Medication History:

RL has prescriptions from two different physicians: her primary care physician and her cardiologist. She has been struggling with insomnia for the past three months. She has been attempting to self-treat using OTC medications with some success, although the additional medications have at times caused her to be confused and feel "hungover". RL's daughter worries that she is on too many medications for her age.

Compliance/dosing issue:

None. The patient's daughter prepares a pillbox to assist her mother.

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Surgical History

Knee Replacement (2001)

Hip Replacement (2007)

Family History

Father: Deceased, hypertension, gout

Mother: Deceased, hypertension, hyperlipidemia

No siblings

Social History

Non-smoker

Drinks 1 glass of red wine per week

She is recently widowed, retired, and still highly functional living at home

Vaccination history

Completed childhood series and was up to date through age 50. Patient's daughter reports she hasn't received any vaccinations in over 10 years.

Physical Exam (12/6/2014) **Prior to intubation**

General: elderly female appearing slightly frail

HEENT: PERRLA, nuchal rigidity, + Babinski sign, mildly inflamed tympanic membranes

Chest: CTA bilaterally, good air movement in all lobes

CV: tachycardia, regular rhythm, no murmurs, rubs, gallops

Abd: soft, tender, bowel sounds present

GU: Deferred

Ext: no edema, pain or redness in any extremities, cap refill 2 seconds

Neuro: EMV 3-5-3 (GCS 11)

Vital signs

HR: 112 bpm

BP: 116/74 mmHg

Temp: 102.1 °F

Mechanical ventilation: FiO2 40%

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	Admission labs
Metabolic Panel	
Na (mEq/L)	132
K (mEq/L)	4.1
Cl (mEq/L)	98
CO ₂ (mEq/L)	24
BUN (mg/dL)	18
SCr (mg/dL)	0.5
Glucose (mg/dL)	298
Calcium (mg/dL)	9.3
Phosphorus (mg/dL)	3.3
Magnesium (mEq/L)	2.1
Albumin (g/dL)	3.4
AST (IU/L)	28
ALT (IU/L)	25
Total bili (mg/dL)	0.5
CBC	
WBC (million/mm ³)	19.1
Hgb (g/dL)	13.5
Hct (%)	41.4
Plt (K/mm ³)	252
Lumbar Puncture and Cytology	
CSF Appearance	Pale yellow
CSF Protein	280 mg/dL
CSF Glucose	<20 mg/dL
Gram stain	Pending
HSV PCR	Negative
WBC	1250 cells/mm ³
RBC	2 cells/mm ³
% Neutrophils	94%
% Lymphocytes	1%
Other	
PT (seconds)	10.2
INR	0.9
aPTT (seconds)	22
A1c	5.4%
Blood cultures	Pending
Point of care glucose (mg/dL)	304

Chest x-ray: Clear bilaterally, no opacities or other irregularities noted. The endotracheal tube is appropriately positioned 5 cm above the carina.

CT head: unremarkable; no evidence of acute hemorrhage nor acute infarct

Cardiac Echo: Left ventricular hypertrophy with estimated EF of 35%

EKG: Sinus tachycardia

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Current Drug Therapy

Drug name/dose/strength/route	Prescribed schedule	Start date	Indication
Piperacillin-tazobactam 3.375 gram IV	STAT x 1	Today	Meningitis
Etomidate 20 mg IV	STAT x 1	Today	Rapid Sequence Intubation
Succinylcholine 100 mg IV	STAT x 1	Today	Rapid Sequence Intubation
Dextrose 5% in water IV	Continuous infusion at 75 mL/hr	Today	Maintenance IV Fluids

Patient Narrative

RL is diagnosed with meningitis, and the Medical ICU (MICU) team is consulted for admission given the need for mechanical ventilation. The only antibiotic that has been given is piperacillin/tazobactam 3.375 gram x 1. The MICU team has consulted the pharmacist for recommendations regarding empiric antimicrobial therapy as well as any other suggestions regarding this critically ill patient.

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
Meningitis (likely bacterial)	1	- Eradicate infection - Reduce the risk of morbidity and mortality from infection - Prevent the development or worsening of short and long-term sequelae (e.g. seizures, hearing loss)	- STAT antibiotic therapy including ALL of the following: - Ceftriaxone 2 gram IV q12h (OR cefotaxime 2 gram q4-6h) ----AND---- - Ampicillin 2 gram IV q4h ----AND---- - Vancomycin loading dose of 25-30 mg/kg actual body weight [ABW] (1500mg-2000mg) followed by 10-15 mg/kg ABW (750 mg -1000 mg) q12h or 15-20 mg/kg ABW (1000 mg-1250 mg) q24h - Antibiotic therapy may be de-escalated if possible to complete a 7-21 day treatment course depending on the causative organism (see judges notes) - Avoid dexamethasone as the patient has already received the first dose of antibiotics	- Monitor neuro exam (GCS) no less frequently than q4h, signs of seizure activity q1h - Daily CBC to monitor WBC - Monitor vital signs q1-2h including fever for development of septic shock - Monitor blood and CSF culture results and de-escalate antibiotics according to culture and susceptibility (C&S) - Daily BMP to monitor renal function while on vancomycin - Monitor vancomycin trough drawn prior to 3rd or 4th dose with goal therapeutic trough of 15-20 mcg/mL

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Seizure activity (secondary to problem 1)	2	Prevent further seizures secondary to meningitis	- Avoid scheduling anti-epileptic therapy at this time as seizures have resolved - Lorazepam 2-4mg IV q5-15 min PRN seizure activity or midazolam 5-10mg q5-15 min PRN seizure activity - If further seizures, additional benzodiazepine plus loading the patient on any of the following is acceptable: phenytoin/fosphenytoin, levetiracetam, valproic acid, phenobarbital, or midazolam continuous infusion (BONUS-see judges notes)	- Monitor for signs of seizure activity q1h - EEG and/or neurology consult if additional seizure activity
Analgesia/Sedation	2	- Relieve pain from endotracheal tube, invasive lines, meningitis - Reduce agitation to keep patient calm while on the ventilator	- Intermittent PRN options or continuous infusions for analgesia and sedation are appropriate as long as they are titrated and given to target specific analgesia and sedation goals - Quick on/off continuous infusions in this case (propofol 5-50 mcg/kg/min or dexmedetomidine 0.2-1.5 mcg/kg/hr) would be especially helpful to follow neuro exam - Bolus options include midazolam 2-4mg OR lorazepam 2-4mg IV q15 min PRN RASS > +1	- Monitor pain scores q1-4 hours - Titrate to patient comfort with goal to make patient pain-free - Monitor RASS or SAS score q1-4 hours - Titrate to RASS score of -2 to +1 or SAS score of 3 to 4 - Monitor vital signs (blood pressure, HR) for all agents, particularly HR with dexmedetomidine - Monitor creatine kinase and triglyceride levels q72h if propofol selected
Hyperglycemia (stress-induced)	2	- Blood glucose 100-180 mg/dL while avoiding hypoglycemia - Prevent complications of hyperglycemia (e.g. further infection)	Recommend continuous insulin infusion (starting dose 2-3 units/hr acceptable) and titrate based on response to 100-180 mg/dL	- Blood glucose monitoring q1-2 hours - Daily BMP for electrolyte monitoring

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
Fluids, electrolytes, nutrition (FEN)	2	- Prevent malnutrition - Reduce risk of infection with early enteral feeding - Prevent fluid and electrolyte imbalances	- Recommend to begin tube feeds - Any enteral formula is acceptable as long as the rate is reasonable and does not overfeed the patient (>30 kcal/kg/day). Trophic feeding would be appropriate at this point. - Recommend to D/C D5W due to hyponatremia and hyperglycemia. Assess need for MIVF and select other fluid at appropriate rate (D5W1/2NS, NS, LR, or variations all appropriate options)	- Monitor for nausea, vomiting, constipation, diarrhea - BMP daily or every other day - UOP 0.5-1 mL/kg/hr
VTE prophylaxis	2	Prevent DVT/PE	- Begin one of the following: - Heparin SubQ 5000 units q8-12h - Enoxaparin SubQ 40 mg q24h - Fondaparinux SQ 2.5 mg q24h - Dalteparin SQ 5000 units q24h	- Monitor daily for extremity pain/swelling, signs/symptoms of bleeding, ability to ventilate and oxygenate on ventilator - If using enoxaparin or fondaparinux, monitor renal function q24-48h while in ICU - Monitor platelet count q24h-48h
Stress ulcer prophylaxis	2	Prevent the development of stress ulcers	Continue H2RA (e.g. famotidine IV/PO 20mg BID or ranitidine IV 50 mg q6-8h or PO 150 mg BID) or begin PPI (e.g. pantoprazole 40 mg IV/PO QD or other appropriately dosed PPI)	Monitor daily for signs/symptoms of GI bleeding including ↓ in H&H, black tarry stool, blood in gastric residuals, hematemesis
Heart failure	3	- Reduce HF-related morbidity and mortality - Improve activities of daily living	- Once patient's condition has stabilized, recommend: - Continuation of home beta-blocker (may change to immediate release to give per tube) - Recommend addition of ACE inhibitor to optimize heart failure regimen - Continue aspirin for primary prevention	- Monitor signs/symptoms of heart failure (shortness of breath, volume overload) - Monitor SCr, K with initiation of ACE inhibitor - Monitor daily weights to detect fluid retention

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			○ Recommend low sodium diet (<2 gram/day)	
Seasonal allergies	3	• Minimize symptoms of seasonal allergies • Reduce polypharmacy by resolving therapeutic duplication of antihistamine agents	• Discontinue diphenhydramine based on hangover effect and confusion, which places this elderly patient at risk of falls • If anticholinergic adverse effects remain with cetirizine alone, recommend intranasal steroid as alternative agent with appropriate instructions for use	• Monitor symptom quality and frequency • If antihistamine continued, monitor for sedation, anticholinergic effects • If intranasal steroids recommended, monitor for signs/symptoms of upper respiratory infection
GERD	3	• Alleviate symptoms of GERD • Reduce polypharmacy by resolving therapeutic duplication of anti-reflux agents	• Discontinue either H2RA or the PPI • The patient's anti-reflux agent should be continued in the hospital, even following extubation	• Monitor for symptom relief of heartburn and complications such as difficult or painful swallowing
Insomnia	3	• Reduce patient's sleep onset latency and/or night time awakenings	• Discontinue diphenhydramine which is resulting in hangover effects and poses a fall hazard for this elderly patient • Counsel patient on appropriate sleep hygiene behaviors including: limit caffeine or other fluid intake prior to bed, reserve the bedroom for sleeping activities only, limit screen time prior to bed, etc • Limit further drug therapy at this time until non-pharmacologic options have failed. If non-pharmacologic options fail in the future, consider melatonin PO 1-5 mg QHS	• Monitor for patient's reported sleep onset latency and night time awakenings
Vaccinations/Health Maintenance	3	• Prevention of future infections via vaccination • Avoid polypharmacy, therapeutic duplication, and adverse effects of medications	• Prior to discharge, and once the patient's infection has resolved, administer the following: ○ Influenza vaccine (inactivated) ○ Pneumococcal polysaccharide vaccine (PPSV23)	• Monitor for local injection site reactions, fever, malaise, arthralgia, dizziness, etc for immunization • Ensure follow-up available for medication review following discharge to ensure avoidance of therapeutic duplication, reduction

Health Care Problem	Priority	Therapeutic Goals	Recommendations for Therapy	Monitoring Parameters and Endpoints
			• Tetanus, diphtheria, and acellular pertussis (Tdap) ○ Stress importance with patient and daughter regarding the need to speak with physician or pharmacist prior to starting/stopping any medications in the future, including OTC drugs	of adverse effects from polypharmacy, and encourage keeping up-to-date records of medications and immunizations.

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