

2020  
ASHP Clinical Skills Competition<sup>SM</sup>  
**NATIONAL COMPETITION CASE**

**Directions to Clinical Skills Competition Participants**

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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 purpose.

## NATIONAL CASE

## 2020 ASHP NATIONAL CLINICAL SKILLS COMPETITION

**Demographic and Administrative Information**

<b>Name:</b> Mike Scott	<b>Patient ID:</b> 6439521-0
<b>Sex:</b> Male	<b>Hospital:</b> NOLA Academic Medical Center <b>Room &amp; Bed:</b> Medical ICU 50
<b>Date of Birth:</b> 03/21/1934	<b>Physician:</b> Dr. Lopez
<b>Height:</b> 5' 10" / <b>Weight:</b> 210 lbs / <b>Race:</b> Caucasian	<b>Religion:</b> Jehovah's Witness
<b>Prescription Coverage Insurance:</b> Medicare Part D	<b>Pharmacy:</b> CVS
<b>Copay:</b> \$5 (90 day generics)/\$10 1 <sup>st</sup> Tier/\$35 2 <sup>nd</sup> Tier	<b>Annual Income:</b> Retired

**Chief Complaint to Saint's Community Hospital**

"I am here to check-in for my hernia repair."

**History of Present Illness**

Mr. Scott was transferred from Saint's Community Hospital to NOLA Academic Medical Center intensive care unit due to acute decompensation. Mr. Scott presented to Saint's Community Hospital on 12/2/2020 for an elective inguinal hernia repair. During Mr. Scott's hernia repair, he became hypotensive requiring fluid administration, vasopressor therapy for 6 hours, and subsequent admission for observation. After being hemodynamically stable and having an unremarkable observation period, Mr. Scott was to be discharged on 12/5/2020. Over the past 12 hours Mr. Scott has become increasingly short of breath and has notable sputum production. Of note, Mr. Scott was admitted to Saint's Community Hospital two months ago for a COPD exacerbation. Saint's Community Hospital is not affiliated with NOLA Academic Medical Center, therefore details regarding his hospitalizations are limited to the transfer summary information that arrived with Mr. Scott.

General Surgery Note- Saint's Community 12/5/2020 8:45am*24 Hour events:*

New sputum production that is purulent, green, and thick in nature. Worsening respiratory status is of concern. Now requiring oxygen, which is new from baseline. Notably hypotensive as well.

*Current Vitals:*

HR: 105 bpm

RR: 20 breaths/min

O2 Saturation: 87% on 4L NC

BP: 80/50 mmHg

Temp: 38.2 °C

*Current Medications:*

3,000 mL IV bolus 0.9% sodium chloride (completed 8:30am)

Acetaminophen 500 mg PO every 4 hours PRN mild pain

Albuterol HFA 90 mcg/actuation 2 puffs every 4 hours shortness of breath, wheezing

Oxycodone 5 mg PO every 4 hours PRN moderate pain

Prednisone 10 mg PO daily

*Assessment/Plan:*

-Hypotensive this morning. Received fluid bolus. Appeared to have minimal to no impact on blood pressure.

-Worsening respiratory status. Titrate oxygen as needed. Sputum culture sent. No blood cultures sent at this time.

Intubation may be imminent. Will prepare patient for transfer to NOLA Academic Medical Center for higher level of care.

-Hernia repair appears to be healing well. No abdominal pain, nausea, vomiting, or diarrhea. Follow up with outpatient clinic in 2 weeks. Weight lifting restrictions should be followed for the next 7 days.

**Past Medical History**

COPD (mMRC 1, CAT 8 from clinic visit 10/6/2020)  
Hypertension  
Type 2 diabetes  
Depression  
Inguinal hernia

**Outpatient Drug Therapy**

Source: Patient provided handwritten list of medications

CVS Pharmacy (888) 123-4567  
Dr. Hall (800) 765-4321  
Albuterol HFA 2 puffs when I feel short of breath  
Escitalopram 20 mg every day  
Lisinopril 20 mg every day  
~~Metformin 1,000 mg twice a day~~  
Pantoprazole DR 40 mg every day  
Prednisone 10 mg every day  
One A Day Men's 50+ Multivitamin

**Medication History**

Mr. Scott states that he has a pill organizer to manage his medications. He claims to never miss doses since starting to use the organizer. Mr. Scott does admit that he was never good at managing his diabetes. He states he "just never understood why he needed to watch his sugars." The admitting physician verbally confirmed with Mr. Scott that he is no longer taking metformin.

**Allergies/Intolerances**

Sulfamethoxazole/trimethoprim- hives

**Surgical History**

None

**Family History**

Father died of colon cancer (75 years old)  
Mother died of a stroke (67 years old)

**Social History**

Alcohol: Social drinker  
Tobacco: Active smoker, smokes ½ pack per day for 40 years  
Illicit drugs: None  
Employment: Retired construction worker  
Marital status: Married, one child

**Immunization History**

Received all childhood and adolescent vaccines up to age 18  
Other pertinent vaccinations as noted:  
Tetanus (Tdap) vaccine: 1/2018  
Zostavax vaccine: 06/2000

**ICU Review of Systems (12/5/2020)**

Positive, for productive cough

**ICU Physical Exam (12/5/2020)**

General: Ill appearing overweight male in respiratory distress, using accessory muscles to breath

HEENT: PERRLA

Chest: Breath sounds diminished at the bases, positive rales and rhonchi bilaterally

Cardiovascular: Tachycardic, normal sinus rhythm

Abdomen: Positive bowel sounds

Genitourinary: WNL

Extremities: Cool to touch

Neuro: AO x 3

Psych: Normal

**ICU Vital Signs (12/5/2020)**

HR: 100 beats/min

RR: 25 breaths/min

O2 Saturation: 80% on high flow nasal cannula

BP: 70/40 mmHg

Temp: 38.4 °C

**Labs and Microbiology**

	12/5/2020 09:00am ICU	12/5/2020 05:15am Saint's Community	10/6/2020 Clinic Fasting
<b>Metabolic Panel</b>			
Na (mEq/L)	138	135	140
K (mEq/L)	4.3	4.2	4.1
Cl (mEq/L)	120	107	100
CO <sub>2</sub> (mEq/L)	28	25	15
BUN (mg/dL)	18	17	12
SCr (mg/dL)	2.3	2.0	1.1
Glucose (mg/dL)	250	243	185
Calcium (mg/dL)	8.7		
Phosphorus (mg/dL)	2.4		
Magnesium (mg/dL)	2.4		
Albumin (g/dL)	4.5		
AST (IU/L)	48		
ALT (IU/L)	37		
Total bili (mg/dL)	1.1		
<b>CBC</b>			
WBC (million/mm <sup>3</sup> )	18.5	18.2	6.1
Bands (%)	10		
Neutrophils (%)	65		
Eosinophils (%)	1		
Basophils (%)	1		
Lymphocytes (%)	25		
Monocytes (%)	3		
Hgb (g/dL)	12.7	13.1	13.8
Hct (%)	38	39	41
Plt (K/mm <sup>3</sup> )	250	270	320

	12/5/2020 09:00am ICU	12/5/2020 05:15am Saint's Community	10/6/2020 Clinic Fasting
<b>Coagulation Panel</b>			
PT (sec)	11.4		
INR	1.1		
PTT (sec)	34		
<b>Other Labs</b>			
Lactate (mmol/L)	4	3.2	
HbA1c (%)	12		11
<b>Urinalysis</b>			
Color		Yellow	
Glucose		Negative	
Hemoglobin		Negative	
Ketone		Negative	
Leukocyte esterase		Negative	
Nitrite		Negative	
Urine pH		5	
Specific gravity		1.026	
Protein		100	
WBC per high-power field		2	
<b>Arterial Blood Gas</b>			
pH	7.2		
P <sub>a</sub> CO <sub>2</sub> (mmHg)	50		
HCO <sub>3</sub> <sup>-</sup> (mEq/L)	20		
P <sub>a</sub> O <sub>2</sub> (mmHg)	65		
S <sub>a</sub> O <sub>2</sub> (%)	80		

<b>Microbiology</b>	
Saint's Community Hospital Expectorated sputum culture (collected 12/5/2020)	<u>Gram stain:</u> Many squamous epithelial cells seen Many Neutrophils seen Few Gram Positive Cocci in clusters seen  <u>Culture:</u> Final results pending
Blood cultures x2 (collected 12/5/2020)	Pending
SARS-CoV-2 PCR Cellex qSARS-CoV-2 IgG/IgM Rapid Test (collected 12/5/2020)	PCR: Not Detected IgG: Negative IgM: Negative
MRSA Nasal PCR (collected 12/5/2020)	Pending
Viral PCR Panel (collected 12/5/2020)	Pending

<b>Pulmonary Function Tests</b>	<b>10/6/2020</b>
FEV <sub>1</sub>	2.350
FVC	3.900
FEV <sub>1</sub> /FVC	0.6
FEV <sub>1</sub> % Predicted	65%

**Other Diagnostic Tests**

Chest X-ray Impression (12/5/2020):

1. Pulmonary vascular congestion with small effusions
2. Left lower lobe consolidation, consistent with pneumonia

**Prior To Admission Hospital Medication List**

Source: Prior to admission medication list found in the NOLA Academic Medical Center medical record

<b>Drug Name/Strength/Route</b>	<b>Prescribed Schedule and Administration</b>	<b>Date Last Reconciled</b>
Albuterol HFA 90 mcg/actuation inhaled	2 puffs every 4 hours PRN shortness of breath, wheezing	4/7/2019
Bupropion XL 150 mg PO	150 mg daily	4/7/2019
Escitalopram 20 mg PO	20 mg daily	4/7/2019
Famotidine 20 mg PO	20 mg daily	4/7/2019
Lisinopril 20 mg PO	20 mg daily	4/7/2019
Metformin 1,000 mg PO	1,000 mg twice daily	4/7/2019
Pantoprazole DR 40 mg PO	40 mg daily	4/7/2019
Prednisone 10 mg PO	10 mg daily	4/7/2019
Sitagliptin 100 mg PO	100 mg daily	4/7/2019

**Current ICU Drug Therapy Orders**Medication Reconciliation:  Completed  Not completed

Drug Name/Strength/Route	Prescribed Schedule and Administration	Start Date
Albuterol HFA 90 mcg/actuation inhaled	2 puffs every 4 hours PRN shortness of breath, wheezing	12/5/2020
Bupropion XL 150 mg PO	150 mg daily (0900)	12/5/2020
Dextrose 50% IV	25 gm PRN every 30 minutes hypoglycemia	12/5/2020
Enalapril 5 mg PO Interchanged to formulary alternative per P&T authority	5 mg once daily (0900)	12/5/2020
Escitalopram 20 mg PO	20 mg daily (0900)	12/5/2020
Famotidine 20 mg PO	20 mg daily (0900)	12/5/2020
Insulin lispro (human) 100 unit/mL injection SLIDING SCALE (0-5 units) Subcutaneously	Scheduled, every 4 hours (0000, 0400, 0800, 1200, 1600, 2000)  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.	12/5/2020
Metformin 1,000 mg PO	1,000 mg twice daily (0900; 2000)	12/5/2020
Pantoprazole DR 40 mg PO	40 mg once daily (0900)	12/5/2020
Prednisone 10 mg PO	10 mg once daily (0900)	12/5/2020
Sitagliptin 100 mg PO	100 mg daily (0900)	12/5/2020

**Pocket Card Version of Hospital's Antibiogram\***

	Ampicillin	Piperacillin/Tazobactam	Cefazolin	Ceftriaxone	Cefepime	Aztreonam	Meropenem	Vancomycin	Daptomycin	Ciprofloxacin	Gentamicin
<i>Staphylococcus aureus- MSSA</i>			100					100		92	99
<i>Staphylococcus aureus- MRSA<sup>1</sup></i>			0	0			0	100	100	41	98
<i>Streptococcus pneumoniae</i>				93	97			100			
<i>Haemophilus influenzae</i>	77										
<i>Escherichia coli</i>	54	96	80	91	92	90	100			82	92
<i>Klebsiella pneumoniae</i>	0	81	92	94	95	94	100			95	100
<i>Pseudomonas aeruginosa</i>		83			85	67	89			87	93

\*Antibiogram does not represent all antibiotic choices

<sup>1</sup>20% of *staphylococcus aureus* isolates are methicillin resistant

**Assessment & Plan**

Mr. Scott is admitted directly to the medical ICU. His clinical status continues to worsen despite an IV fluid bolus and being placed on high flow nasal cannula prior to arrival. The team is preparing to intubate the patient and place an orogastric tube post intubation. Of note, Mr. Scott has limited line access consisting of two peripheral lines. Mr. Scott has pending orders to place a central line and an arterial line.

While Mr. Scott is undergoing rapid sequence intubation, using hospitalized protocols for medication selection and dosing, the intern asks you to review Mr. Scott's case and make recommendations regarding his ongoing acute hospital problems, as well as any additional areas of optimization you may find regarding his past medical history.



**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
<p><b>Septic shock secondary to hospital acquired pneumonia</b></p>	<p>1</p>	<ul style="list-style-type: none"> <li>• Antibiotics                             <ul style="list-style-type: none"> <li>○ Initiate broad spectrum antibiotics directed towards likely respiratory source, ideally within the first hour</li> </ul> </li> <li><u>MRSA Coverage</u> <ul style="list-style-type: none"> <li>○ Vancomycin                                     <ul style="list-style-type: none"> <li>▪ Loading dose: 20-25 mg/kg IV once using actual body weight   <ul style="list-style-type: none"> <li>• Appropriate doses: 2,000 mg; 2,250 mg; 2,500 mg</li> </ul> </li> <li>▪ Administer dose no faster than 1,000 mg/hour to prevent red man syndrome</li> <li>▪ Recommend intermittent dosing due to acute kidney injury</li> </ul> </li> <li>○ Linezolid should be avoided due to concomitant SSRI</li> </ul> </li> <li><u>Pseudomonas Coverage</u></li> <li><b><i>*Award bonus points to teams that select extended interval dosing strategies</i></b></li> <li>1. Select <b>one</b> of the following anti-pseudomonal β-lactam based agents                             <ul style="list-style-type: none"> <li>○ Piperacillin-tazobactam                                     <ul style="list-style-type: none"> <li>▪ 3.375 gm IV every 8 hours, extended interval dosing (over 4 hours)   <ul style="list-style-type: none"> <li>• Loading dose of 3.375 gm or 4.5 gm IV once over 30 minutes may be administered</li> </ul> </li> <li>▪ 4.5 gm IV every 8 hours (over 30 minutes)</li> <li>▪ 3.375 gm IV every 6 hours (over 30 minutes)</li> </ul> </li> </ul> </li> </ul>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>• Goal vancomycin trough 15-20 mcg/mL</li> <li>• Goal MAP ≥ 65mmHg</li> <li>• Lactate clearance &lt;2 mmol/L within 24 hours</li> <li>• Resolution of infection</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>• Check vancomycin serum concentration in 24 hours to evaluate pharmacokinetic parameters and need for re-dosing</li> <li>• Fever defervescence</li> <li>• Daily WBC monitoring for down trend</li> <li>• Daily serum creatinine and BUN evaluation for resolving AKI to schedule vancomycin regimen and adjust antibiotic dosing</li> <li>• Cultures, MRSA PCR, and viral PCR results to de-escalate antibiotics</li> <li>• Improvement in blood pressure to titrate down vasopressor therapy</li> <li>• Serum chloride to avoid further acid-base disturbances, as well as potential</li> </ul>

		<ul style="list-style-type: none"> <li>○ Cefepime <ul style="list-style-type: none"> <li>▪ 2 gm IV every 12 hours, extended interval dosing (over 3-4 hours)</li> <li>▪ 1 gm IV every 12 hours (over 30 minutes)</li> </ul> </li> <li>○ Meropenem <ul style="list-style-type: none"> <li>▪ 2gm IV every 12 hours, extended interval (over 3 hours)</li> <li>▪ 2 gm IV every 12 hours (over 15-30 minutes) if using adjusted body weight for CrCl</li> <li>▪ 1 gm IV every 12 hours (over 15-30 minutes) if using ideal body weight for CrCl</li> </ul> </li> <li>○ Imipenem-cilastatin 200 mg IV every 6 hours (over 20-30 minutes)</li> <li>○ Ceftazidime 2 gm IV every 24 hours (over 15-30 minutes)</li> <li>○ Aztreonam is not ideal based on antibiogram</li> </ul> <p><b>2. PLUS</b> <i>Select <b>one</b> of the following non- <math>\beta</math>-lactam anti-pseudomonal agents</i></p> <ul style="list-style-type: none"> <li>○ Levofloxacin 750 mg IV every 48 hours</li> <li>○ Ciprofloxacin 400 mg IV every 24 hours</li> <li>○ Aminoglycoside (Gentamicin, Tobramycin, Amikacin) <ul style="list-style-type: none"> <li>▪ Not ideal, currently in AKI</li> </ul> </li> <li>○ Polymixins (Colistin or Polymixin) <ul style="list-style-type: none"> <li>▪ Not ideal, no evidence of high MDR prevalence</li> </ul> </li> </ul> <ul style="list-style-type: none"> <li>● Fluids <ul style="list-style-type: none"> <li>○ Adequate bolus in ED was already provided</li> <li>○ Recommend assessment of fluid responsiveness to determine if maintenance fluids should be added</li> </ul> </li> <li>● Vasopressors <ul style="list-style-type: none"> <li>○ Initiate Norepinephrine titrated to a goal MAP of <math>\geq 65</math>mmHg <ul style="list-style-type: none"> <li>▪ Range: 0.1-3.3 mcg/kg/min or 5-200 mcg/min</li> </ul> </li> <li>○ Discontinue enalapril 5 mg PO daily in the setting of acute hypotension (also addressed in additional problems below)</li> </ul> </li> <li>● Steroids <ul style="list-style-type: none"> <li>○ Discontinue prednisone 10 mg PO daily</li> <li>○ Initiate hydrocortisone <ul style="list-style-type: none"> <li>▪ 50 mg IV every 6 hours</li> <li>▪ 100 mg IV every 8 hours</li> </ul> </li> </ul> </li> </ul>	<p>negative impacts of renal impairment and mortality</p> <ul style="list-style-type: none"> <li>● Assessment of fluid responsive technique to determine if maintenance fluids should be added</li> <li>● Duration of antibiotic therapy, likely 7 days is appropriate pending additional culture data</li> </ul>
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<p><b>Acute kidney injury</b></p>	<p>2</p>	<ul style="list-style-type: none"> <li>• Fluid management, as described in the sepsis plan</li> <li>• Discontinue enalapril 5 mg PO daily in setting of AKI and hypotension</li> <li>• Renally dose medications, as described in other problems</li> </ul>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>• Improve serum creatinine back to baseline</li> <li>• Urine output 0.5-1 mL/kg/hr</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>• Daily serum creatinine and BUN evaluation for resolving AKI to schedule vancomycin regimen and adjust antibiotic dosing</li> <li>• Urine output as a sign of AKI improvement</li> </ul>
<p><b>Diabetes</b></p>	<p>2</p>	<p>Current Plan:</p> <p><u>Oral Antidiabetic Agents</u></p> <ul style="list-style-type: none"> <li>• Hold metformin <ul style="list-style-type: none"> <li>○ Appears to be no longer taking per patient provided medication list</li> </ul> </li> <li>• Discontinue sitagliptin 100 mg PO daily, patient is no longer taking</li> </ul> <p><u>Insulin Therapy Options</u></p> <p><i>Teams should select <b>one</b> of the following options:</i></p> <ul style="list-style-type: none"> <li>• Continue sliding scale insulin regimen</li> <li>• Discontinue sliding scale insulin regimen and initiate an insulin infusion <ul style="list-style-type: none"> <li>○ Insulin Regular 1-16 units/hour titrated to maintain blood glucose between 140-180 mg/dL</li> </ul> </li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>• Reinitiate metformin 1,000 mg PO BID after discussing with patient reason for prior discontinuation (non-adherence and poor disease state control understanding)</li> <li>• Counsel on lifestyle modifications, proper insulin injection technique, and how to use a glucometer</li> <li>• Initiate insulin therapy since A1C &gt;10% <ul style="list-style-type: none"> <li>○ Basal/bolus insulin strategy</li> <li>○ Based on 24 hour insulin requirements on in-hospital insulin therapy regimen</li> <li>○ 50% of total requirement should be converted to basal insulin</li> </ul> </li> </ul>	<p><u>Therapeutic Goals</u></p> <p>Current Plan:</p> <ul style="list-style-type: none"> <li>• Blood glucose &lt;180 mg/dL in the ICU setting</li> <li>• Avoidance of hypoglycemia</li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>• A1C &lt;7.5%</li> <li>• Fasting/pre-prandial blood glucose: 90-130 mg/dL</li> <li>• Peak post-prandial blood glucose: &lt;180 mg/dL</li> <li>• Bedtime glucose: 90-150 mg/dL</li> <li>• Blood pressure: &lt;140/90 mmHg</li> </ul> <p><u>Monitoring Parameters</u></p> <p>Current Plan:</p> <ul style="list-style-type: none"> <li>• Blood glucose every 4 hours if on SSI or every 1 hour if on an insulin infusion</li> <li>• Signs and symptoms of hypoglycemia: shakiness, irritability, confusion, tachycardia, hunger</li> </ul>

			<ul style="list-style-type: none"> <li>Hyperglycemia and need for adjustment to sliding scale regimen or alteration in insulin therapy approach</li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>Blood glucose: AM fasting, pre-prandial, 1-2 hours post-prandial, bedtime</li> <li>A1C in 3 months</li> <li>Gastrointestinal disturbances with metformin use</li> <li>Lifestyle modifications</li> <li>Signs/symptoms of hypo and hyperglycemia</li> <li>Adherence to regimen, as this appears to have been an issue in the past</li> </ul>
<b>Sedation/ Analgesia</b>	<b>2</b>	<ul style="list-style-type: none"> <li>Initiate analgosedation strategy after successful intubation <ul style="list-style-type: none"> <li>Fentanyl 25-200 mcg/hr infusion plus fentanyl boluses 25-100 mcg PRN every 15 minutes <b>OR</b></li> <li>Hydromorphone 0.5-2 mg/hr infusion plus hydromorphone boluses 0.5-1 mg PRN every 15 minutes</li> </ul> </li> </ul> <p><b>BONUS:</b> Add bowel regimen in setting of continuous opiate therapy</p>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>RASS +1 to -1</li> <li>CPOT <math>\leq</math> 2 or BPS <math>\leq</math> 3</li> <li>Perform daily sedation interruption</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>Pain and sedation scoring for addition of other sedative agents or optimization of dosing strategy</li> <li>Consider need for multimodal pain strategies (ex. Acetaminophen)</li> <li>Constipation in the setting of continuous opiate exposure</li> <li>Delirium via the CAM-ICU assessment</li> </ul>
<b>DVT prophylaxis</b>	<b>2</b>	<ul style="list-style-type: none"> <li>Initiate heparin 5,000 units SQ every 8 hours <ul style="list-style-type: none"> <li>Less preferred option: heparin 5,000 units SQ every 12 hours</li> <li>Less preferred option: enoxaparin 30 mg SQ daily</li> </ul> </li> </ul>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>Prevent DVT formation</li> <li>If enoxaparin selected: Anti-Xa 0.2-0.5 units/mL</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>Hemoglobin, hematocrit, platelets, HIT</li> </ul>

			<ul style="list-style-type: none"> <li>If enoxaparin selected: Anti-Xa monitoring</li> </ul>
<b>Stress ulcer prophylaxis/GERD</b>	2	<p>Current Plan:</p> <ul style="list-style-type: none"> <li>Continue pantoprazole 40 mg daily, but convert to oral granules or IV</li> <li>Discontinue famotidine 20 mg PO daily, as this was inappropriately continued on admission</li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>Interview patient to discuss GERD symptoms as patient is on home pantoprazole without indication</li> <li>Discuss lifestyle modifications to prevent/reduce GERD</li> <li>Consider continuation of pantoprazole 40 mg PO daily if patient reports GERD symptoms and prior failure on famotidine</li> </ul> <p><b>BONUS:</b> Initiate chlorhexidine 0.12% 15mL PO twice daily for VAP prevention</p>	<p><u>Therapeutic Goals</u></p> <p>Current Plan:</p> <ul style="list-style-type: none"> <li>Prevent stress ulcer formation</li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>Prevent GERD symptoms</li> </ul> <p><u>Monitoring Parameters</u></p> <p>Current Plan:</p> <ul style="list-style-type: none"> <li><i>C. difficile</i> risk with antibiotics and long term PPI exposure</li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>Lifestyle modifications</li> <li>Signs and symptoms of GERD</li> </ul>
<b>Depression</b>	2	<p>Current Plan:</p> <ul style="list-style-type: none"> <li>Continue escitalopram 20 mg PO daily</li> <li>Discontinue bupropion XL 150 mg PO daily, as this was inappropriately continued on admission</li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>Continue escitalopram 20 mg PO daily</li> </ul>	<p><u>Therapeutic Goals</u></p> <p>Current Plan:</p> <ul style="list-style-type: none"> <li>Minimize agitation and delirium related to holding/discontinuing neuropsychiatric medications</li> </ul> <p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>Minimize signs/symptoms of depression</li> </ul> <p><u>Monitoring Parameters</u></p> <p>Current Plan:</p> <ul style="list-style-type: none"> <li>RASS scoring, as discussed in the sedation plan, to ensure patient is not too somnolent or too agitated</li> <li>CAM-ICU scoring for delirium</li> <li>Serotonin syndrome if other serotonergic medications are added</li> </ul>

			<p>Long Term Plan:</p> <ul style="list-style-type: none"> <li>• Signs and symptoms of depression</li> </ul>
<p><b>Inguinal Hernia Repair (Bonus – recommendations, goals, and parameters not graded)</b></p>	2	<ul style="list-style-type: none"> <li>• Initiation of a PRN pain management regimen with a preference towards a non-opioid analgesic strategy after completion of continuous IV narcotic for sedation <ul style="list-style-type: none"> <li>○ Acetaminophen would be the preferred agent</li> <li>○ Avoid NSAIDs given AKI</li> </ul> </li> </ul>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>• Adequate pain control using a visual analog scale</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>• Signs and symptoms of infection: redness, swelling, tender to touch, fever, chills, drainage from surgical site</li> </ul>
<p><b>Smoke Cessation</b></p>	3	<ul style="list-style-type: none"> <li>• Assess 5 A's <ul style="list-style-type: none"> <li>○ Ask - Identify and document tobacco use status.</li> <li>○ Advise - In a clear, strong, and personalized manner, urge every tobacco user to quit.</li> <li>○ Assess - Is the tobacco user willing to make a quit attempt at this time?</li> <li>○ Assist - For the patient willing to make a quit attempt, use counseling and pharmacotherapy to help him quit.</li> <li>○ Arrange - Schedule follow-up contact, in person or by telephone, preferably within the first week after the quit date.</li> </ul> </li> <li>• If willing to quit initiate <b>one</b> of the following pharmacologic therapies: <ul style="list-style-type: none"> <li>○ Nicotine patch 14 mg transdermally daily</li> <li>○ Nicotine lozenge 2-4 mg depending on when patient smokes their 1<sup>st</sup> cigarette of the day, one lozenge every 1-2 hours (Max 20 per day)</li> <li>○ Nicotine gum 4mg, chew 1 gum every 1 hour (Max 24 per day)</li> <li>○ Nicotine inhaler, 1 inhalation as needed every 1-2 hours (Max 16 per day)</li> <li>○ Nicotine nasal spray, 1 spray per nostril every 1-2 hours (Max 80 sprays per day)</li> <li>○ Bupropion would not be recommended due to current escitalopram use</li> <li>○ Varenicline would not be recommended due to depression history</li> </ul> </li> <li>• Consider behavioral intervention to encourage smoking cessation <ul style="list-style-type: none"> <li>○ Cognitive behavior therapy</li> <li>○ Motivational interviewing</li> </ul> </li> </ul>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>• Minimize tobacco withdrawal symptoms, with the ultimate goal of abstinence from smoking if patient is willing</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>• Abstinence from smoking</li> <li>• Barriers to quitting</li> <li>• Signs and symptoms of withdrawal: cravings, difficulty sleeping, mood changes, restlessness, increased hunger, constipation</li> </ul>

<b>COPD</b>	<b>3</b>	<ul style="list-style-type: none"> <li>• Continue PRN albuterol inhaler</li> <li>• Initiate a LAMA for Group C COPD <ul style="list-style-type: none"> <li>○ Best choice: <ul style="list-style-type: none"> <li>▪ Tiotropium MDI 5 mcg (2 inhalations) daily</li> </ul> </li> <li>○ Appropriate choice, but not cost effective: <ul style="list-style-type: none"> <li>▪ Revedfenacin nebulizer 175 mcg (1 vial) inhaled daily</li> <li>▪ Glycopyrrolate nebulizer 25 mcg (1 vial) inhaled twice daily</li> </ul> </li> <li>○ Likely inappropriate therapy choices because of dry powder inhaler formulation and poor inspiratory effort <ul style="list-style-type: none"> <li>▪ Aclidinium DPI 400 mcg (1 inhalation) twice daily</li> <li>▪ Glycopyrrolate DPI 15.6 mcg (1 capsule inhaled) twice daily</li> <li>▪ Tiotropium DPI 18 mcg (1 capsule inhaled) daily</li> <li>▪ Umeclidinium DPI 62.5 mcg (1 inhalation) daily</li> </ul> </li> </ul> </li> <li>• Taper off and discontinue chronic steroid therapy <ul style="list-style-type: none"> <li>○ Steroids should not be tapered prior to vasopressor cessation</li> </ul> </li> </ul>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>• Improve functional status and quality of life</li> <li>• Optimize lung function</li> <li>• Improve symptom management</li> <li>• Prevent exacerbations</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>• Signs of dyspnea</li> <li>• Number of exacerbations</li> <li>• Inhaler technique and adherence</li> <li>• Respiratory effort if dry powder inhaler was selected</li> </ul>
<b>Hypertension</b>	<b>3</b>	<ul style="list-style-type: none"> <li>• All home antihypertensive medications should be held in the setting of acute hypotension and AKI</li> <li>• Once hypotension is resolved and renal function improved, resume ACE-inhibitor <ul style="list-style-type: none"> <li>○ Enalapril incorrect conversion from home Lisinopril, dosing should be 10 mg PO daily</li> <li>○ Initiate Enalapril 10 mg PO daily if still admitted (based on formulary per inpatient medical record) or lisinopril 20 mg PO daily (if discharged)</li> </ul> </li> <li>• Counsel patient on home blood pressure monitoring</li> </ul>	<p><u>Therapeutic Goals</u></p> <ul style="list-style-type: none"> <li>• Blood pressure: &lt;140/90 mmHg</li> </ul> <p><u>Monitoring Parameters</u></p> <ul style="list-style-type: none"> <li>• Serum creatinine</li> <li>• Serum potassium</li> <li>• Signs and symptoms of hypotension</li> <li>• Signs and symptoms of hypertension</li> </ul>
<b>Immunizations</b>	<b>3</b>	<ul style="list-style-type: none"> <li>• Administer high dose influenza vaccine as patient is over 65</li> <li>• Administer Shingrix now and second dose in 2-6 months</li> <li>• Administer pneumococcal vaccine PPSV23</li> </ul>	<p><u>Therapeutic Goals:</u></p> <ul style="list-style-type: none"> <li>• Prevent potential disease burden and optimize public health through immunizations specific to patient's respiratory comorbidities</li> </ul> <p><u>Monitoring Parameters:</u></p> <ul style="list-style-type: none"> <li>• Injection site reactions (local) – redness, swelling, itching, pain</li> </ul>

			<ul style="list-style-type: none"><li>• Low grade fever and general malaise to be expected for a few days</li><li>• Observe patient for at least 15 minutes after being vaccinated to monitor for signs of anaphylaxis (throat swelling, difficulty breathing)</li></ul>
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