I.

Current Diagnosis: *Acute Hypoxic Respiratory Failure*

- *The patient is a 57-year-old woman, who initially, presented to the Emergency Department on 2 January 2026 for Nasal Congestion, Cough, Pulmonary Body Aches (Myalgia), and Increased Shortness of Breath (SOB) on exertion. These signs/symptoms all support her initial admission diagnosis of Pneumonia and Influenza A. The medication's prescribed the combat this initial diagnosis was Augmentin. Blood Cultures from her initial Emergency Department admission came back positive for MRSA + MSSA Bacteremia Sepsis. This led to her being prescribed Vancomycin. The patient then received a Chest X-Ray (CXR), confirming an Increase + Worsening R-Sided Pleural Effusion. On 6 January 2026, the patient was switched from Vancomycin to Linezolid. The patient was also scheduled for a CT-Guided Pigtail Catheter to be placed. Post-Pleural Effusion Drainage, the patient reported a decrease in Shortness of Breath (SOB). On 9 January 2026, Percutaneous Drain was documented as "Unable to evacuate all of the fluid," this resulted in the patient receiving Thrombolytic Injections, which also failed to evacuate the targeted fluid. A Consultation was then submitted for definitive drainage of the Hemithorax for Presumed Empyema. This resulting in the patient receiving surgery w/ R-Thorascopic Drainage of Effusion + Drainage of Pulmonary Abscess w/ Total Lung Decortication.*

Past Medical History:

- *Diabetes Mellitus (Type 1)*
- *Long-Term Insulin Pump*
- *Acquired Hypothyroidism*
- *Hypertension (HTN)*
- *Hyperlipidemia*
- *BMI > 45-49.9*

II.

Pathophysiology: What's Happening in the Body at the Cellular Level

- *Initial Infection: Influenza A + Bacterial Pneumonia:*

- *Influenza A Infects + Damages the Respiratory Epithelial Cells. Epithelial Cells are import being that their primary job is to protect the Lungs + Remove Unwanted Mucus. However, in this patient's case being that her Epithelial Cells are damaged, made her lungs more susceptible to harboring bacteria, triggering an inflammatory immune system response. The inflammatory immune system response was triggered due to the patient's Lung Macrophages detecting the Influenza Bacteria, which signaled to the body to release White Blood Cells (WBC) (Neutrophils) to move into the lungs. This inducing Inflammation + Accumulation of Fluid in the Alveoli, resulting in increased difficulty to breathe.*

- *Bacteremia: Bacteria enters the Bloodstream:*

- *The inflammation induces damage to the Lung's Interior Lining + Vessels, creating an Introductory Pathway of Bacteria into the Blood Stream. Following the introduction of bacteria, this leads to the compromisation of the barrier between the Lungs + Blood. This is precisely where MRSA + MSSA Bacteria then enters the Bloodstream. During this process, bacteria accumulates + releases toxins, inducing the signaling of White Blood Cells (WBC). At this point, Bacteremia is detected + can be confirmed via Blood Cultures.*

- *Sepsis: Systemic Reaction:*

- *Sepsis is classified as the Dysregulation of the Immune System as a whole. The White Blood Cells (WBC) + Leukocytes are signaled + released in large quantities to patrol, protect, and defend the Blood + Lung Tissues. This act is referred to as the "Cytokine Storm" (or Hypercytokinemia), which is defined as a Dangerous Immune Overreaction where the body releases too many Inflammatory Messengers (Cytokines) in an aggressive amount + manner, causing the System (body) to become Overwhelmed + Inflamed. This results in the further progression of damage to the vessels in the lungs, causing the fluid located in, said vessels to migrate into their surrounding tissues. Ultimately, causing the Organ (Lungs) to malfunction despite the presence of Oxygen (O2).*

- *Pleural Effusion: Fluid Accumulation In + Around Lungs:*

- *Why fluid accumulates during this process is due to the Aggressive + Rapid Influx of Inflammation within the Organ (Lungs). This causes the body to activate its defense mechanism causing the Capillaries + Vessels to increase their permeability + dilate, which allows an increase in Blood Flow to deliver the essential White Blood Cells (WBC) + Leukocytes to the site of Infection + Injury. This results in the White Blood Cells (WBC) + Leukocytes mixing with the Pleural Fluid, causing the influx in Bacteria to precipitate the production of Pus. This is what caused the patient to experience the increase + worsening of Shortness of Breath (SOB).*

- *Empyema: Drainage Failure:*

- *Why the initial attempts to drain the accumulation of fluid in the lungs failed was due to the Body + Infection attempting to heal itself. This process would be categorized as the 5th and Final Stage of Infection referred to as "Convalescence." This is basically when the Neutrophils release DNA + Enzymes, causing Fibrins + Collagen to form thick walls (Loculations), finalized with Fibroblasts that form Connective (Scar) Tissue, replacing the involved Inflammatory Debris. This is why the Initial Thrombolytics + Catheter were obsolete because the accumulated initial thin fluid fermented, creating a more concentrated + dense substance.*

- *Surgery + Why It Was Required:*

- *The Thoracoscopic Decortication Surgery was required due to the Infected Fibrous Connective (Scar) Tissue that developed. This procedure is also referred to as "VAPS" (Video-Assisted Thoracoscopic Surgery). This procedure is a minimally invasive way to operate inside the Chest Cavity, avoiding Large Incisions + Rib Spreading seen with Traditional Open Surgery. This procedure for the patient resulted in a Decrease in Inflammation, Improvement in Oxygen (O2) Exchange, and Restoration in Lung Compliance.*

- *Antibiotics + Why They Were Altered:*

- *The Vancomycin, which was initially prescribed, is typically utilized to target Bacterial Cell Walls. So, it became obsolete regarding the Abscess of Infection accumulation. Whereas, Linezolid, can target, reduce, and block Bacterial Protein Synthesis + Production. Despite, the Vancomycin being obsolete in*

regard to this patient Infection Diagnosis, both Vancomycin + Linezolid are typically the go to in regard to Gram Positive Infections like MRSA.

III.

Correlate Current Diagnosis with Presented Signs + Symptoms:

- *Nasal Congestion:*

- *The patient's Initial Diagnosis of Influenza A is what infected the Upper Respiratory Epithelial Cells. This causing the Release of Cytokines + Dilation of Vessels + Increase of Mucus-Producing Cells. Resulting in the patient to experience Nasal Congestion. This presented symptom is expected with what the patient was diagnosed with.*

- *Cough:*

- *The Inflammatory Process causes an accumulation of Mucus + Pus in the Airway, resulting in increased irritation within the Airway. Goblet Cells increase Mucus Production + Neutrophils release Enzymes, causing Cilia Impairment. This presented symptom is expected with what the patient was diagnosed with.*

- *Body Aches (Myalgia):*

- *This is a typical Systemic Immune response to an Infection. The Cytokines react to Muscle Tissue, causing an Increase in Protein Breakdown + Metabolic Demand. This presented symptom is expected with what the patient was diagnosed with.*

- *Increased Shortness of Breath (SOB) on Exertion:*

- *The Pneumonia filled the patients Alveoli with Inflammatory Fluid + Pus. Plural Effusion in combination with Empyema causes Increased Compression within the Lungs. This obstructs the flow of Oxygen (O2) to the Alveolar + Capillary Membrane, causing the Alveoli to collapse + fill with exudate, ultimately allowing less Oxygen (O2) to enter the Bloodstream. Resulting in Limited Lung Expansion + Hypoxemia. This presented symptom is expected with what the patient was diagnosed with.*

IV.

Labs Values	***Rationale for Labs***	***Normal Lab Values***	***Pt Diagnosis r/t Labs***
ABGs: *pH: 7.50* *pCO2: 29.9* *pO2: 78.1* *HCO3: 22.6*	*Provides information pertaining to the Oxygenation, Ventilation, and Acid-Base Status of the patient*	*ABGs:* *pH: 7.35-7.45* *pCO2: 35-45* *pO2: 80-100* *HCO3: 22-26*	*Respiratory Alkalosis with Hypoxemia, Consistent with Acute Hypoxic Respiratory Failure caused by: Pneumonia + Pleural Effusion + Sepsis. This supports the S/Sx of Hyperventilation to compensate for Impaired Oxygen (O2) Exchange*
WBC:14.6	*Provides information pertaining to Immune Functionality, Infections, Inflammation, Immune Disorders, etc.*	*WBC: 4.1-10.5*	*Correlates to the patient's Diagnosis of: MRSA + MSSA Pneumonia + Bacteremia + Sepsis. Cytokines stimulate WBC Production + Neutrophils in the Lung + Pleural Space*
RBC: 4.38	*Provides information pertaining to Oxygen Delivery, Blood Health, and Potential Underlying Medical Conditions.*	*RBC: 3.9-5.6*	*Correlates to the patient's Diagnosis of Hypoxia due to Lung Pathology.*
Hbg: 12.8	*Provide information pertaining to the Oxygen (O2)-*	*Hbg: 13-17*	*Correlates to the patient's Diagnosis of Acute Hypoxic*

	Carrying Capacity of RBCs, Proficiency of Perfusion to Lungs + Surrounding Tissues, and the Removal of CO2 throughout the Circulatory System.		*Respiratory Failure + Shortness of Breath (SOB) on Exertion indicating a Gas-Exchange Problem*
Hct: 37.6	*Provides information pertaining to the % of RBCs within the Bloods Total Volume, Hydration Status, etc.*	*Hct: 38.8-50*	*Correlates to the patient's Diagnosis of Hypoxia. Being that it's not concerningly low, it still could be used to support the patient's Inflammation + Respiratory Illness*
Platelet: 161	*Provides information pertaining to Bleeding + Clotting Issues, Monitorization of Health Issues, etc.*	*Platelet: 150,000-450,000*	*Correlates to the patient's Diagnosis of Sepsis. Platelets typically decrease in the presence of Sepsis due to Consumption + Microclot Formations*
Glucose: 337	*Provides information pertaining to Metabolic Processes + Disorders, Brain Functionality, Organ Performance, Diabetes, etc.*	*Glucose: 70-100*	*Correlates to the patient's Current + Previous Diagnosis of Diabetes + Sepsis. The patient has a Medical History of Type I Diabetes Mellitus + Recent Diagnosis of Bacteremia + Sepsis which is known to trigger a Systemic release of Cortisol, Epinephrine, and Glucagon*

- *Rationale for ABGs:*

    - *ABGs are monitored to Assess Oxygenation + Ventilation + Acid-Base Balance. The ABGs provided reveal the Patient's Initial Diagnosis of Acute Hypoxic Respiratory Failure (↓ PaO2 + Respiratory Alkalosis) and is also consistent with her Pneumonia + Pleural Effusion + Sepsis. Lung Inflammation + Fluid Accumulation impair Oxygen (O2) Diffusion in combination with Sepsis which Increases Respiratory effort, resulting in Hyperventilation + ↓ PaCO2. In the absence of Acute Hypoxic Respiratory Failure, Pneumonia, Bacteremia + Sepsis, the ABGs would reflect normal values in pH, PaCO2, and PaO2, which would indicate Effective Ventilation + Oxygenation, and stability within the Acid-Base Balance.*

- *Rationale for WBCs:*

    - *White Blood Cell (WBC) count is monitored to Assess the Presence + Severity + Progression of Infections + Infections. The elevation of WBCs indicate the activation of the Immune Systems response to the current Bacterial Infections: MRSA + MSSA Pneumonia w/ Bacteremia + Sepsis. In this patient, the WBC count of 14.6 reflects the Leukocytosis, which occurs when Inflammatory Cytokines stimulate increasing the number of WBCs, "Neutrophils," to fight infection. This also supports the Diagnosis of Sepsis which correlates with the patient's Systemic Inflammatory response. In the absence of Acute Hypoxic Respiratory Failure, Pneumonia, Bacteremia + Sepsis, the WBC Values would reflect between 4.1-10.5, which would indicate + support no signs of an active infection.*

- *Rationale for Hgb:*

    - *Hemoglobin (Hgb) levels are monitored to evaluate the Blood's Oxygen (O2)-Carrying Capacity, which is required in patients with Acute Hypoxic Respiratory Failure + Sepsis. Hemoglobin binds to Oxygen (O2) in the lungs and transports it to Tissues. If Hemoglobin (Hgb) Levels aren't adequate, this*

can result in worsening in Hypoxia. In this patient, the Hemoglobin (Hgb) Level of 12.8 within normal limits, indicating that Oxygen (O2) delivery is adequate + not impaired. This finding supports that the patient's Hypoxia is due to Impaired Gas Exchange from Pneumonia + Pleural Effusion + Empyema, and not the Hemoglobin (Hgb) Levels. In the absence of Acute Hypoxic Respiratory Failure, Pneumonia, Bacteremia + Sepsis, the Hgb Values would reflect between 13-17, indicating adequate Oxygen (O2)-Carrying Capacities.

Diagnostic Tests	***Rationale for Diagnostic Tests***	***Normal Diagnostic Test***	***Pt Diagnosis r/t Diagnostic Tests***
Chest X-Ray (CXR)	*Detects Lung Infiltrates, Consolidation, and Pleural Fluid*	*Clear Lungs* *No Opacities + Consolidations* *Pleural Spaces: No Fluid + Air*	*Worsened R-Sided Pleural Effusion* *Lung Opacities w/ Pneumonia* *↓ Lung Expansion r/t Hypoxia*
Chest CT	*Provides 3D Imaging of Lungs + Pleural Space* *Detects Pulmonary Abscesses + Pneumonia*	*Clear Lungs* *No Abscesses + Consolidation* *Pleural Spaces: No Fluid* *Bronchi + Bronchioles: Patent + Unobstructed*	*Pleural Effusion* *Empyema* *Pulmonary Abscess Formation* *Pneumonia*
CT-Guided Pigtail Catheter	*Drains Pleural Effusions* *Diagnoses Effusions + Empyema*	*No Pleural Fluid*	*Empyema*

V.

VI.

Medications	***Rationale for Medications***	***Pt Diagnosis r/t Medications***
Guaifenesin	*Thins Respiratory Secretions*	*Pneumonia + Empyema:* *↑ Mucous Production* *Improves Airway Clearance* *Reduces WOB*
Albuterol/Ipratropium	*Bronchodilator*	*Reduces Bronchoconstriction r/t Inflammation* *Improves Oxygen (O2) Delivery* *Improves SOB + Hypoxia*
Aspirin	*↓ Platelet Aggregation* *Anti-Inflammatory*	*↑ Clotting Risk r/t Sepsis* *↓ Thrombotic Complications*
Levothyroxine	*Replaces Thyroid (T4) Hormones*	*Maintains Metabolic Stability*
Metoprolol Tartrate	*Regulates HR + BP*	*Tachycardia r/t Sepsis* *↓ Cardiac Workload*

Atorvastatin Calcium	*↓ Cholesterol Levels*	*↓ Chronic Cardiovascular Risk*
Linezolid	*Antibiotic for Infections*	*Infection r/t MRSA + MSSA, Sepsis + Bacteremia*
Enoxaparin Sodium	*Prevents Blood Clots*	*↑ Risk for Blood Clots r/t Sepsis + ↓ Mobility*
Polyethylene Glycol	*Prevents Constipation*	*↑ Risk of Constipation r/t Hospitalization + ↓ Mobility*
Docusate Sodium	*Softens Stool*	*↑ Risk of Constipation r/t Hospitalization + ↓ Mobility*
Famotidine	*Reduces Gastric Acid Production*	*↑ Risk of Gastric Ulcers r/t Stress* *↑ Risk of GI Bleed r/t Sepsis*

- *Rationale for Guaifenesin:*

    - *The Inflammation involved in combination with the patient's diagnosis of Pneumonia + Empyema, puts the patient at Risk for an ↑ in Thick Mucus Production. This could potentially obstruct the patient's airway, resulting in an ↑ in WOB + SOB. By prescribing the patient Guaifenesin, this addresses these problems in advance by Improving Secretion Clearance, Maintaining Airway Patency, and Reducing the Patient's WOB.*

- *Rationale for Albuterol/Ipratropium:*

    - *The Inflammation involved in combination with the patient's diagnosis of Acute Hypoxic Respiratory Failure + Respiratory Infection, puts the patient at Risk for ↑ SOB + Airway Constriction. By prescribing the patient Albuterol/Ipratropium, this essentially dilates the bronchioles resulting in Improved Airflow + Ventilation and a ↓ in WOB + Respiratory Effort.*

- *Rationale for Linezolid:*

    - *The Gram-Positive Bacterial Infection involved in combination with the patient's diagnosis of MRSA/MSSA Bacteremia, Sepsis, and Pneumonia, put the patient at Risk for an ↑ in Systemic Inflammation. By prescribing Linezolid, this ultimately Reduced the Bacterial Load, treating the underlying Infections involved.*

VII.

Correlate Current Diagnosis w/ Pertinent Medical History:

- *Hypertension (HTN) correlates to the patient's Current Diagnosis by contributing Cardio-Vascularity Issues. Being that the patient was diagnosed with Sepsis, this led to an ↑ in Cardiac Demand (Vasodilation) during the bodies inflammatory period, ultimately making it more difficult for the body to maintain adequate Perfusion + Oxygen (O2) delivery.*

- *Hyperlipidemia correlates to the patient's Current Diagnosis by contributing additional Chronic Bodily Inflammation. Being that the patient was diagnosed with Sepsis, this resulted in almost a doubling in inflammation, which could*

be linked to the contribution of the patient's Pulmonary Edema + Impaired Gas Exchange.

- *Hypothyroidism correlates to the patient's Current Diagnosis by contributing a ↓ in Metabolic Processes + Respiratory Mechanisms. Being that the patient was diagnosed with Acute Hypoxic Respiratory Failure, this may have possibly been one of the many factors that contributed to the patient's Compensation Impairment + Hypoxia.*

- *Type 1 Diabetes Mellitus is known to Impair Immune Functionality, tremendously ↑ the patient's Risk of Infections.*

- *Morbid Obesity (BMI > 45-49.9) is known to ↓ Lung Expansion + Capacity, which leads to the patient requiring an ↑ of Oxygen (O2) Demand. Which supports the patient requiring 2L via Nasal Cannula + her diagnosis of Acute Hypoxic Respiratory Failure + Pneumonia.*

VIII.

Nursing Interventions r/t Current Diagnosis:

- *Assess Vitals Q1H*
  Rationale: To Ensure pt isn't experiencing Cardiac + Respiratory Distress

- *Maintain HOB ≥ 30º*
  Rationale: To Prevent Respiratory Distress + Aspiration

- *Monitor ABGs QDaily*
  Rationale: To Ensure Adequate Oxygenation + Ventilation + Acid-Base Balance

- *Skin Care QShift or PRN*
  Rationale: To Prevent and Assess for Infections + Skin Breakdown

- *Administer Guaifenesin 1200mg PO QBID*
  Rationale: To Thin + Prevent Airway Secretions; ↑ Airway Clearance

- *Administer Albuterol/Ipratropium 3mL PO QID*
  Rationale: To Reduce Bronchoconstriction + ↑ Oxygen (O2) Delivery

- *Administer Linezolid (600mg) 300mL/hr IV Q12H*
  Rationale: To Combat MRSA/MSSA Bacteremia + Sepsis Infection

- *Educate on Respiratory Distress S/Sx upon Discharge*
  Rationale: To Ensure prompt Interventions + Prevent Further Complications

- *Educate on Incentive Spirometer upon Discharge*
  Rationale: To Promote Lung Strength + Expansion; Prevent reoccurring Lung Infection

IX.

Interdisciplinary Team Members involved in the Care of Patient:

- *This patient required an extensive list in regard to Interdisciplinary Teams that were involved throughout her care. Initially, The Emergency Department (ED) Team were the first ones to Assess + Diagnose her with Influenza A + Pneumonia. While admitted in the Emergency Department (ED), Labs were drawn on the patient, which extended the involvement to the Lab Department. The patient was then discharged home, to then receive a call back from Lab + Hospitalist, regarding her lab values that were previously drawn. She then was instructed to come back to the Medical Center to be admitted to the Critical Care Unit (4C). While admitted in the Critical Care Unit (4C), the Interdisciplinary Team was then extended to the members of the Pharmacy to handle her Home + Newly Prescribed Medications. Respiratory was also involved in regard to Assessing her Admission Oxygenation concerns + ABGs + ↑ in SOB on Exertion. Radiology was involved in regard to her Chest X-Ray (CXR) + CT. Surgery was involved in regard to the placement of her CT-Guided Pigtail Catheter. Wound Care Nurses were involved in regard to her Post-Op Catheter Procedure. Dietary was involved in regard to ensuring the patient received Breakfast, Lunch, and Dinner. Lastly, Registered Nurses (RN) were involved in her Overall Routine Assessments + Ensuring Comfortability while hospitalized. Additional Interdisciplinary Teams that weren't as involved with the patient's plan of care while hospitalized but would be extremely beneficial to the patient's care plan upon discharge would be Physical Therapy (PT), Occupational Therapy (OT), Dietitian/Nutritionist, Personal*

Trainer, etc. Being that PT/OT only once, I think the patient would benefit if she scheduled outpatient with them, as well as the additional that were listed being that she is Morbidly Obese and seems to struggle with her overall functionality and ability to perform ADLs due to her excess weight.