N441 Care Plan

Lakeview College of Nursing

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Patient Demographics (3 points)

Date of Admission	**Patient Initials**	**Age**	**Gender**
10/22/20	D.R.F.	86	Male
Race/Ethnicity	**Occupation**	**Marital Status**	**Allergies**
Caucasian	Retired	Married	Omnipaque (Iohexol)
Code Status	**Height**	**Weight**	
Full Code	179.1 cm (5’ 10.5”)	93 kg (205 lbs.)	

Medical History (5 Points)

Past Medical History: COPD, hypertension, actinic keratosis, squamous cell carcinoma of the hand

Past Surgical History: Total hip arthroplasty and exploratory abdominal surgery.

Family History: Unknown, patient was unable to communicate effectively enough to obtain this information and it wasn’t listed in the electronic medical record.

Social History (tobacco/alcohol/drugs): The patient’s chart indicates no prior or current use of alcohol or other substances, but patient reports a history of smoking tobacco which ended in 1963.

Assistive Devices: The patient uses reading glasses.

Living Situation: The patient lives at home with his wife.

Education Level: Unknown, patient was unable to communicate effectively enough to obtain this information and it wasn’t listed in the demographic information.

Admission Assessment

Chief Complaint (2 points): Shortness of breath

History of present Illness (10 points): The patient reported to the emergency department on 10/22/20 due to shortness of breath with a productive cough, which had worsened over several

days. A positive COVID-19 test was obtained 10 days prior related to the patient exhibiting signs and symptoms of infection, such a sore throat, cough, shortness of breath, and flu-like symptoms. Initial respiratory assessment indicated bilateral rhonchi but no accessory muscle use was observed at this time. D-dimer levels were elevated without evidence of pulmonary embolism. Chest x-ray showed bilateral infiltrates consistent with lung inflammation. The care plan on admission to the ICU on 10/29/20 was to administer remdesivir, steroids, and convalescent antibodies, if possible.

Primary Diagnosis

Primary Diagnosis on Admission (2 points): Acute respiratory failure, hypoxia, and pneumonia related to COVID-19 infection complicated by a history of COPD.

Secondary Diagnosis (if applicable): Severe emphysema

Pathophysiology of the Disease, APA format (20 points):

Acute respiratory failure represents a medical emergency as lung function has become so impaired that the client can no longer exchange oxygen for carbon dioxide effectively. Criteria that differentiate between respiratory complications or disease and respiratory failure include systemic hypoxemia, measured by arterial blood gases showing an oxygen tension (PaO2) less than 60 mm Hg. The expected or normal range for arterial oxygen tension is 80-100 mm Hg. The client will also exhibit an increase in circulating carbon dioxide levels that yields a carbon dioxide tension (PaCO2) greater than 50 mm Hg coupled with an acidic arterial pH. Collectively, the client is diagnosed with hypercapnia and respiratory acidosis. Respiratory failure is either acute or chronic, with the progression to a chronic condition usually related to underlying chronic obstructive pulmonary disease (COPD) or neuromuscular disorders that physically impair respiratory function. The client cared for today presented with a history of COPD, or

chronic respiratory failure, which had become acute, given the additional strain imposed by inflammation, hypoxia, and COVID-19-related pneumonia. In other words, the client's already compromised respiratory system experienced compounding insults that caused a further decline in the ventilation and perfusion matching of the lungs.

Aberrant respiratory function was evidenced upon his admission through the ED by a new onset of increased shortness of breath, bilateral rhonchi, and compensated respiratory acidosis, as an ABG draw and analysis showed normal blood pH paired with low PaCO2 and HCO3- levels. Practitioners separate respiratory failure into different categories based on the underlying structures experiencing disease and their function, either ventilation or perfusion. Ventilatory issues are usually associated with asthma or cystic fibrosis, while perfusion issues most often follow COPD and restrictive lung disease. For this client, pneumonia and the inflammatory cascade initiated by COVID-19 infection caused the restriction, further exacerbated by the COPD.

The earliest signs and symptoms of respiratory failure are the side effects of decreasing levels of circulating oxygen that begin to affect our crucial organ systems' function, such as the brain and heart. Clients will be restless or anxious, fatigued or lethargic, dyspneic, tachycardic, and hypertensive. As hypoxemia worsens, more concerning clinical manifestations of the lack of oxygen will include confusion, tachypnea, central cyanosis, diaphoresis, and potentially respiratory arrest. Diminished breath sounds, dullness on percussion, and accessory muscle use may be noted. These patients are at risk of losing their airway and will be intubated and maintained on mechanical ventilation while treatment seeks to eliminate underlying infections. The progression of the inflammatory response and damage to the lung tissue, observed in chest x-rays taken throughout the client's nearly month-long admission (10/22/20 to 11/10/20),

suggests the client progressed to acute respiratory distress syndrome (ARDS). The critical finding indicative of this, noted as recently as the chest x-ray associated with our clinical day assessment, includes increasing bilateral infiltration and the inability to reduce the level of supplemental oxygen with a goal of extubation.

The client required positive end-expiratory pressure (PEEP) at 12 mm Hg with a FiO2 of 60% to maintain oxygen levels within normal limits. Even with these settings, pulse oximetry showed fluctuations between 93-95% O2 saturation. At the tissue level, inflammatory mediators increase capillary membrane permeability, and cells, debris, and purulent secretions decrease effective airway diameter and reduce lung compliance, leading to severe hypoxemia. Beyond the mechanical ventilation with PEEP, which helps keep alveoli open for gas exchange, other nursing interventions will include prone positioning, sedation, and nutritional support. Close monitoring of fluid balance and shifts, with strict monitoring of intake and output, is necessary as this client is at risk for multi-organ dysfunction syndrome (MODS). Treatment with ionotropic and vasopressor agents begins as needed to support cardiac output and systemic circulation to prevent shock and MODS.

Pathophysiology References (2) (APA):

Capriotti, T., Parker Frizzell, J. (2016). *Pathophysiology: Introductory concepts and clinical perspectives*. F.A. Davis Company.

Hinkle, J.L., Cheever, K.H. (2018). *Brunner & Suddarth's Textbook of medical-surgical nursing* (14th ed.). Wolters Kluwer.

Laboratory Data (15 points)

CBC Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab	Normal Range	Admission Value	Today's Value	Reason for Abnormal Value
RBC ($x10^6$/mL)	4.4-5.8	3.66	2.76	This low value, combined with the deficiencies in Hgb and Hct suggest anemia r/t nutrient deficiencies, likely vitamin B12, as the client is NPO and receiving enteral feedings (Hinkle & Cheever, 2018; Swearingen, 2016).
Hgb (g/dL)	13-16.5	14.5	10.4	This low value, combined with the deficiencies in Hgb and Hct suggest anemia r/t nutrient deficiencies, likely vitamin B12, as the client is NPO and receiving enteral feedings. (Hinkle & Cheever, 2018; Swearingen, 2016).
Hct (%)	38-50	39.7	31.1	This low value, combined with the deficiencies in Hgb and Hct suggest anemia r/t nutrient deficiencies, likely vitamin B12, as the client is NPO and receiving enteral feedings. (Hinkle & Cheever, 2018; Swearingen, 2016).
Platelets ($x10^3$/mL)	140-440	129	81	Many of the medications the client is taking are associated with the adverse effect of thrombocytopenia, including metoprolol, montelukast, enoxaparin, and allopurinol (Jones & Bartlett Learning, 2019).
WBC ($x10^3$/mcL)	4-12	5.20	7	N/A
Neutrophils (%)	40-68	71.2	75	The continuing elevation in neutrophils and lymphocytes suggest that and underlying infectious process, other than COVID-19, such as pneumonia or UTI may have started. This is likely due to the fact that the client in on mechanical ventilation and has an indwelling catheter, so cultures may be needed to rule this out and treat properly (Hinkle & Cheever, 2018).
Lymphocytes (%)	19-49	6.5	11.2	The continuing elevation in neutrophils and lymphocytes suggest that and underlying infectious process, other than COVID-19, such

				as pneumonia or UTI may have started. This is likely due to the fact that the client in on mechanical ventilation and has an indwelling catheter, so cultures may be needed to rule this out and treat properly (Hinkle & Cheever, 2018).
Monocytes (%)	3-13	21.5	11.8	The initial elevation and subsequent decline are likely the result of the initial problem of COVID-19 infection that has resolved.
Eosinophils (%)	0-8	0.1	1.8	N/A
Bands (per 100 WBC)		0	0	N/A

Chemistry Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab	Normal Range	Admission Value	Today's Value	Reason For Abnormal
Na- (mmol/L)	133-144	132	150	The initial presentation of borderline hyponatremia is likely dilutional related to fluid retention. Dehydration is the likely cause of today's value given the elevated BUN and normal creatinine combined with the patient's NPO status (Swearingen, 2016).
K+ (mmol/L)	3.5-5.1	4.2	3.6	N/A
Cl- (mmol/L)	98-107	103	114	The chloride imbalance may be passive due to the elevation in Na^+ or an indication of kidney injury related to poor perfusion and inflammatory processes, potentially due to a UTI (Swearingen, 2016).

CO2	21-31	20	29	This value likely represents hyperventilation due to the shortness of breath the client presented to the ED with, which in part compensates for respiratory acidosis the client was experiencing. This is supported by initial ABGs showing a low level of HCO_{3-} (Hinkle & Cheever, 2018).
Glucose (mg/dL)	70-99	105	108	This slight elevation is still within an acceptable range, and could be the effect of the low rate of enteral feeding administration or increased metabolic demands imposed by inflammation (Hinkle & Cheever, 2018).
BUN (mg/dL)	7-25	30	44	The initial presentation of elevations in both BUN and creatinine suggest that inflammation and issues with circulation and oxygenation may have affected renal function. The subsequent elevation in BUN but not creatinine supports dehydration although acute kidney injury can't be ruled out (Hinkle & Cheever, 2018).
Creatinine (mg/dL)	0.5-1.2	1.24	0.86	The initial presentation of elevations in both BUN and creatinine suggest that inflammation and issues with circulation and oxygenation may have affected renal function. The subsequent elevation in BUN but not creatinine supports dehydration although acute kidney injury can't be ruled out (Hinkle & Cheever, 2018).
Albumin (g/dL)	3.5-5.7	3.6	2.3	The client is NPO due to deterioration and mechanical ventilation, so requires enteral feedings. The rate of 25 mL/hr continuously is somewhat low and may need to be adjusted up, or supplemented with additional protein (Hinkle & Cheever, 2018).
Calcium (mg/dL)	8.6-10.3	8.7	9.1	N/A

Mag (mg/dL)	1.6-2.6	1.8	1.9	N/A
Phosphate	N/A	N/A	N/A	N/A
Bilirubin (mg/dL)	0-0.2	1.1	0.5	Elevations in bilirubin are in indicator of liver damage or poor function, likely related to the number of medications this client is prescribed which are hard on the liver, as supported by elevated liver enzymes (Jones & Bartlett Learning, 2019).
Alk Phos (U/L)	34-104	47	50	N/A
AST (U/L)	13-39	49	49	Elevations in liver enzymes are associated with several of the medications the client is taking, including montelukast, simvastatin, enoxaparin, pantoprazole, and allopurinol. This may require and adjustment of the dosages, especially as this is an older adult client (Jones & Bartlett Learning, 2019).
ALT (U/L)	7-52	26	45	N/A
Amylase	N/A	N/A	N/A	N/A
Lipase	N/A	N/A	N/A	N/A
Lactic Acid (mmol/L)	0.36-1.25	1.10	N/A	N/A
Troponin (ng/mL)	0-0.04	0.03	N/A	N/A
CK-MB (U/L)	30-2230	99	N/A	N/A
Total CK	N/A	N/A	N/A	N/A

Other Tests Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab Test	Normal	Value on	Today's	Reason for Abnormal

	Range	Admission	Value	
INR	0.9-1.1	1.1	N/A	N/A
PT (sec)	10.1-13.1	12.6	N/A	N/A
PTT	25-36	32	N/A	N/A
D-Dimer (ng/mL)	0-622	1927	N/A	In the absence of DVT and PE in this client, as assessed by CT, this is likely related to the inflammatory process, as supported by elevated CRP (Hinkle & Cheever, 2018).
BNP (pg/ML)	<100	41	N/A	N/A
HDL	N/A	N/A	N/A	N/A
LDL	N/A	N/A	N/A	N/A
Cholesterol	N/A	N/A	N/A	N/A
Triglycerides (mg/dL)	<150	127	117	N/A
Hgb A1c	N/A	N/A	N/A	N/A
TSH	N/A	N/A	N/A	N/A

Urinalysis Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Lab Test	Normal Range	Value on Admission	Today's Value	Reason for Abnormal
Color & Clarity	Clear, pale yellow	N/A	Clear yellow	N/A
pH	5-9	N/A	5	N/A
Specific Gravity	1.003-1.030	N/A	1.010	N/A
Glucose	Negative	N/A	Negative	N/A
Protein	Negative	N/A	Negative	N/A
Ketones	Negative	N/A	Negative	N/A
WBC	Negative	N/A	Negative	N/A
RBC	4 or less	N/A	11-20	Pantoprazole can cause acute

(cells/HPF)				interstitial nephritis and hematuria, there could be an effect of medications, or this could be an indication of acute kidney injury related to poor perfusion (Jones & Bartlett Learning, 2019).
Leukoesterase	Negative	N/A	Negative	N/A

Arterial Blood Gas Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Test	Normal Range	Value on Admission	Today's Value	Explanation of Findings
pH	7.35-7.45	7.43	7.46	This is a slight elevation in pH representing compensation for poor lung function or perhaps the beginning of metabolic alkalosis (Hinkle & Cheever, 2018).
PaO2 (mmHg)	85-115	64	72	The insufficient levels of arterial oxygen are related to severe lung injury secondary to inflammatory processes and COPD (Hinkle & Cheever, 2018)..
PaCO2 (mmHg)	35-45	29	39	The low value and subsequent normalization of CO_2 suggest that the client was previously compensating for respiratory acidosis (Hinkle & Cheever, 2018)..
HCO3 (mmol/L)	22-26	19.2	27.8	This is a slight elevation in pH representing compensation for poor lung function or perhaps the beginning of metabolic alkalosis (Hinkle & Cheever, 2018)..
SaO2 (%)	95-98	94	97	Variable oxygen saturation is related to severely diminished lung function due to COVID-19 infection, pneumonia, and a history of COPD (Hinkle & Cheever, 2018)..

Cultures Highlight All Abnormal Labs—Explanations must be in complete sentences and contain in-text citations in APA format.

Test	Normal Range	Value on Admission	Today's Value	Explanation of Findings
Urine Culture	N/A	N/A	N/A	N/A
Blood Culture	N/A	N/A	N/A	N/A
Sputum Culture	N/A	N/A	N/A	N/A
Stool Culture	N/A	N/A	N/A	N/A

Lab Correlations Reference (APA):

Hinkle, J.L., Cheever, K.H. (2018). *Brunner & Suddarth's Textbook of medical-surgical nursing* (14th ed.). Wolters Kluwer

Jones & Bartlett Learning. (2019). *Nurse's Drug Handbook* (18th ed.). Jones & Bartlett Learning, LLC.

Swearingen, P.L. (2016). *All-in-one nursing care planning resource* (4th ed.). Elsevier.

Diagnostic Imaging

All Other Diagnostic Tests (5 points): A CT of the chest without contrast revealed changes consistent with COPD and bilateral ground glass type infiltrates in the absence of pleural effusion. An ECG showed that the client has a normal sinus rhythm with right bundle branch block, a left anterior fascicular block, and left ventricular hypertrophy associated with QRS widening. Since admission, the client has required daily chest x-rays to monitor the progression of lung disease and related infectious processes. The most recent x-ray, performed 11/10/20, showed right and middle lower lob infiltration and consolidation which was present in the left lung at a moderate to extensive level. Pleural effusion noted the day prior was determined to have resolved. Little improvement in infiltration is noted from previous chest x-rays, with

absence of pneumothorax with hyperinflation of the lungs. A bilateral ultrasound of the kidneys showed a cortical mass of the left kidney but was otherwise unremarkable.

Diagnostic Test Correlation (5 points): The CT and chest x-rays confirm suspensions of severe lung inflammation and injury related to COVID-19 infection and COPD. The ECG findings are consistent with a client who has a history of hypertension that is beginning to exhibit ventricular hypertrophy related to increased demands on the heart.

Diagnostic Test Reference (APA):

Hinkle, J.L., Cheever, K.H. (2018). *Brunner & Suddarth's Textbook of medical-surgical nursing* (14th ed.). Wolters Kluwer

Current Medications (10 points, 1 point per completed med)
10 <u>different</u> medications must be completed

Home Medications (5 required)

Brand/Generic	metronidazole/Metrogel
Dose	0.75% gel
Frequency	Twice daily
Route	Topical
Classification	Antibiotic/Anti-protozoal
Mechanism of Action	Causes cell death (bactericidal) by damaging bacterial/protozoal DNA such that nucleic acid synthesis is no longer possible
Reason Prescribed	Prophylaxis or treatment for ventilator associated pneumonia
Contraindications (2)	Breastfeeding or hypersensitivity to the drug or it's components
Side or Adverse Effects (2)	Lacrimation or erythema
Nursing Considerations (2)	Metronidazole can alter values for liver enzymes, lactate dehydrogenase, and enzymes If patient has adverse CNS reactions (peripheral neuropathy, seizures) discontinue administration and notify provider immediately
Key Nursing Assessment(s)/Lab(s) Prior to Admission	Baseline values for liver enzymes, glucose, lactate dehydrogenase, and triglycerides Culture and sensitivity prior to first administration With topical, may first test a small area for evidence of hypersensitivity
Client Teaching Needs (2)	Urge the patient to complete the entire regimen as prescribed Follow up with the provider may be necessary to ensure the

	infection has resolved (repeat culture and sensitivity)

Brand/Generic	terazosin/Hytrin
Dose	5 mg (capsule)
Frequency	Once nightly
Route	P.O.
Classification	Antihypertensive
Mechanism of Action	Promotes vasodilation by inhibiting alpha-adrenergic receptors in vascular smooth muscle, bladder neck, prostate. Improves blood pressure and urine flow.
Reason Prescribed	Benign prostatic hyperplasia (BPH)
Contraindications (2)	Hypersensitivity to the drug or it's components only
Side or Adverse Effects (2)	Syncope or vertigo and GI effects (constipation, diarrhea, nausea, or vomiting)
Nursing Considerations (2)	For patients with a feeding tube allow the capsule to dissolve in warm tap water (60 mL) with stirring (5-10 minutes). Older adults may have extreme hypotension ad are more susceptible to adverse reactions.
Key Nursing Assessment(s)/Lab(s) Prior to Admission	Prostate specific antigen to rule out cancer. Vital signs with focus on blood pressure and assessment of orthostatic hypotension. Intake and output, assess for urinary frequency.
Client Teaching Needs (2)	If several doses are missed the client should contact the provider to determine a schedule and dosage that should be resumed. The drug may take up to 6 weeks to improve urinary hesitancy.

Brand/Generic	metoprolol tartrate/Lopressor
Dose	12.5 mg (1/2 tablet)
Frequency	Twice daily
Route	P.O.
Classification	Antianginal/Antihypertensive
Mechanism of Action	Acts mainly in cardiac tissue to inhibit beta-1 receptors, which can decrease cardiac excitability, output, and myocardial oxygen requirements. Helps decrease blood pressure by inhibiting the release of renin in the kidneys
Reason Prescribed	To treat hypertension, either alone or in combination with other medications. May also be used to treat heart failure.
Contraindications (2)	Acute heart failure or cardiogenic shock. Pheochromocytoma
Side or Adverse Effects (2)	Arrhythmias, cardiac arrest, or cardiogenic shock Agranulocytosis, leukopenia, or thrombocytopenia
Nursing Considerations (2)	This medication should not be administered to clients with a heart rate <45 bpm

	If dosage exceeds 400 mg daily, monitoring for bronchospasm and dyspnea must occur due to competitive inhibition of beta2-adrenergic receptors
Key Nursing Assessment(s)/Lab(s) Prior to Admission	ECG, vital signs (baseline and before administration), cardiac enzyme panel, respiratory and cardiovascular assessment, glucose levels, thyroid hormone levels,
Client Teaching Needs (2)	The patient should take this medication at the same time each day This medication should not be stopped abruptly due to risk for myocardial ischemia, MI, severe hypertension, or ventricular arrhythmias.

Brand/Generic	simvastatin/Zocor
Dose	10 mg (tablet)
Frequency	Once nightly
Route	P.O.
Classification	Antihyperlipidemic
Mechanism of Action	By disrupting the action of liver enzymes and their production of cholesterol precursors, cholesterol synthesis is reduced.
Reason Prescribed	For the treatment of hyperlipidemia
Contraindications (2)	Active hepatic disease, concurrent use with medications known to be hard on the liver, such as cyclosporine, gemfibrozil, clarithromycin, erythromycin, and -azole medications, among others.
Side or Adverse Effects (2)	Atrial fibrillation and chest pain Elevated liver enzymes to hepatic failure
Nursing Considerations (2)	This medication should be used cautiously in patients with hepatic and renal impairment Monitor the serum lipoprotein level to evaluate therapy efficacy
Key Nursing Assessment(s)/Lab(s) Prior to Admission	Lipoprotein levels, liver enzyme panel, glomerular filtration rate, ECG, cardiac enzyme panel, cardiovascular and respiratory assessments.
Client Teaching Needs (2)	Patient should combine drug therapy with a low-fat, cholesterol-lowering diet Patient should recognize symptoms of liver impairment, such as anorexia, dark urine, fatigue, upper abdominal pain, or jaundice, and should report to provider immediately

Brand/Generic	allopurinol/Zyloprim
Dose	300 mg (tablet)
Frequency	Once daily
Route	P.O.
Classification	Antigout agent
Mechanism of Action	The drug and its metabolites inhibit an enzyme (xanthine oxidase) responsible for conversion of precursors to uric acid.

Reason Prescribed	To treat primary gout and hyperuricemia
Contraindications (2)	Hypersensitivity to allopurinol or it's components only.
Side or Adverse Effects (2)	Vasculitis Liver effects (elevated liver enzymes, granulomatous hepatitis, hepatic necrosis, hepatomegaly)
Nursing Considerations (2)	Maintain a daily fluid intake of 2L to encourage adequate output and elimination of excess uric acid. Vitamin C should be avoided as acidification of the urine isn't desired.
Key Nursing Assessment(s)/Lab(s) Prior to Admission	Baseline CBC, uric acid levels. Renal and liver function tests at baseline and during therapy. BUN and creatinine, skin turgor, check mucous membranes to check fluid status.
Client Teaching Needs (2)	The client must have intake that will allow for at least 2L of output daily (8-10 glasses of water) Symptoms to report to the provider include unusual bleeding, bruising, fever, chills, gout attack, numbness, or tingling.

Hospital Medications (5 required)

Brand/Generic	enoxaparin/Lovenox
Dose	40 mg
Frequency	Every 12 hours
Route	Subcutaneous injection
Classification	Antithrombotic
Mechanism of Action	Inhibits components of the cascade that promote coagulation (thrombin and factor Xa) while potentiating or promoting the effect of antithrombin III, which is an innate coagulation inhibitor
Reason Prescribed	Prophylaxis for DVT
Contraindications (2)	Active, major bleeding History of heparin-induced thrombocytopenia
Side or Adverse Effects (2)	Stroke and GI effects (bloody stools, cholestatic and hepatocellular liver injury, diarrhea, elevated liver enzymes, hematemesis, melena, nausea, vomiting)
Nursing Considerations (2)	Not recommended for patients with prosthetic heart valves unless close monitoring of enoxaparin levels is performed This drug is not to be administered by I.M. injection.
Key Nursing Assessment(s)/Lab(s) Prior to Admission	aPTT/PT at baseline and with treatment, signs/symptoms of bleeding or hemorrhage (GI bleeds, neurovascular assessment, bruising, petechiae), liver panel and renal function test (GFR). CBC (platelet levels may drop). Fecal occult blood test.
Client Teaching Needs (2)	Injection sites need to be rotated between the left and right anterolateral abdominal wall Review safe handling and disposal of all needles or syringes

Brand/Generic	montelukast/Singulair

Dose	10 mg (tablet)
Frequency	Once nightly
Route	P.O.
Classification	Antiallergen/anti-asthmatic
Mechanism of Action	Decreases the activity of immune cell populations and suppresses the related inflammatory response through inhibiting production of mediators
Reason Prescribed	To treat asthma or alleviate inflammatory responses
Contraindications (2)	Hypersensitivity to the drug or it's components or evidence of viral infection in children
Side or Adverse Effects (2)	Systemic eosinophilia or thrombocytopenia Arthralgia or myalgia
Nursing Considerations (2)	This medication does not treat acute asthma or status asthmaticus, but reduces severity of attacks Suicidal ideation may occur or be exacerbated by the start of therapy or with dosage adjustments
Key Nursing Assessment(s)/Lab(s) Prior to Admission	CBC with differential, , mental health assessment, liver panel and renal function test, respiratory assessment and chest x-ray, amylase and lactase levels
Client Teaching Needs (2)	The patient should not skip doses even when they are feeling well Increased bleeding or significant skin reactions that have a rapid onset should be reported to the provider immediately

Brand/Generic	albuterol/Proventil
Dose	2.5 mg/3 mL, 0.083% nebulizer solution
Frequency	Three times daily
Route	Nebulization/Inhaled
Classification	Bronchodilator
Mechanism of Action	Relaxes bronchial smooth muscles by decreasing intracellular cAMP and calcium levels, which acts to prevent or reduce muscle contraction in the airways
Reason Prescribed	To prevent bronchospasm
Contraindications (2)	Hypersensitivity to the medication or it's components only
Side or Adverse Effects (2)	Cardiovascular effects (angina, arrhythmias, atrial fibrillation, extrasystoles, SVT, tachycardia, palpitations) Hyperglycemia
Nursing Considerations (2)	This medication must be used cautiously in patients with cardiac disorders, diabetes mellitus, digitalis intoxication, hypertension, hyperthyroidism, or a history of seizures May cause transient hypokalemia so potassium levels should be monitored
Key Nursing Assessment(s)/Lab(s) Prior to Admission	CBC, CMP, ECG, thyroid hormone levels, vital signs.

Client Teaching Needs (2)	Verify safety of concomitant use of other inhaled drugs with provider The patient is not to exceed prescribed dose and should report to provider if efficacy decreases

Brand/Generic	midazolam/Versed
Dose	2 mg
Frequency	Every two hours as needed
Route	I.V.
Classification	Acts as a hypnotic or sedative
Mechanism of Action	Increases GABA activity in the brain, and can relax skeletal muscles or induce sleep at high doses
Reason Prescribed	To relieve anxiety and agitation related to mechanical ventilation
Contraindications (2)	Acute angle-closure glaucoma, coma, or hypersensitivity to this medication or other benzodiazipines, shock
Side or Adverse Effects (2)	CNS effects (agitation, delirium, anxiety, ataxia, confusion, lethargy) Cardiac or respiratory arrest
Nursing Considerations (2)	Resuscitative equipment should be kept at the bedside at all times Level of consciousness should be assessed frequently because there is a fine line between sedation and unconsciousness/disorientation
Key Nursing Assessment(s)/Lab(s) Prior to Admission	Continuous monitoring of cardiac and respiratory function (telemetry and continuous pulse oximetry), baseline and frequent vital signs. Neurologic assessment
Client Teaching Needs (2)	May cause some temporary memory loss Alcohol and some antibiotics should not be taken concurrently as they can prolong or intensify the effects of midazolam

Brand/Generic	dexmedetomidine/Precedex
Dose	0.2 mcg/kg/hr, titrated up as needed
Frequency	Continuous
Route	I.V.
Classification	Sedative
Mechanism of Action	Inhibits norepinephrine release in the brain by increasing the activity of alpha 2 adrenergic receptors in the brain stem
Reason Prescribed	Used as part of a combination therapy to maintain sedation in ventilated patients
Contraindications (2)	Hypersensitivity to the medication or it’s components only
Side or Adverse Effects (2)	Agitation and respiratory depression
Nursing Considerations (2)	Performing titration every 30 minutes or longer may reduce the incidence of hypotension For infusions lasting more than 24 hours, patients should be

	monitored for tolerance and dose-related increased in adverse effects
Key Nursing Assessment(s)/Lab(s) Prior to Admission	Vital signs and cardiovascular and respiratory assessment. Continuous telemetry and pulse oximetry.
Client Teaching Needs (2)	Report shivering to the provider as this may indicate issues with thermoregulation Encourage plenty of fluid intake as hypotensive clients are more likely to experience the hypotensive/bradycardic effects.

Medications Reference (APA):

Jones & Bartlett Learning. (2019). *2019 Nurse's drug handbook* (18th ed.). Jones & Bartlett Learning, LLC.

Lam, S.W., Alexander, E. (2008). Drug update: Dexmedetomidine use in critical care. *AACN Advance Critical Care*, 19(2), 113-120.

Up To Date. (2020). *Dexmedetomidine: Drug information*. Wolters Kluwer. https://www.uptodate.com/contents/dexmedetomidine-drug-information

Assessment

Physical Exam (18 points)

GENERAL (1 point): **Alertness:** **Orientation:** **Distress:** **Overall appearance:**	Patient is alert and oriented x2, understands his health status and location but seems unsure of daily events and persons, likely due to administration of sedatives. The patient is very distressed and is indicating non-verbally he wants to go up to heaven and be extubated, or be allowed to pass away.
INTEGUMENTARY (2 points): **Skin color:** **Character:** **Temperature:** **Turgor:** **Rashes:** **Bruises:** **Wounds:** . **Braden Score:** **Drains present: Y☐ N ☒** **Type:**	The patient's skin is pale, cool, and dry with poor skin turgor likely related to NPO status and some level of dehydration. Ecchymoses cover the abdominal region and upper extremities. Pressure injuries are apparent on the client's face related to mechanical ventilation and prone positioning, and injuries are also present on the sacrum and right ear. Braden Score: 12 Significant risk for pressure injury, patient should

	be turned q2h.
HEENT (1 point): **Head/Neck:** **Ears:** **Eyes:** **Nose:** **Teeth:**	Head and neck are symmetrical, carotid pulses are palpable and strong (2+). No lymphadenopathy in head or neck noted. Sclera is white with some redness and irritation, cornea clear, conjunctiva pink, excessive tearing is noted. PERRLA .
CARDIOVASCULAR (2 points): **Heart sounds:** **S1, S2, S3, S4, murmur etc.** **Cardiac rhythm (if applicable):** **Peripheral Pulses:** **Capillary refill:** **Neck Vein Distention: Y ☐ N ☒** **Edema Y ☒ N ☐** **Location of Edema:**	Capillary refill was assessed as approximately 3 seconds. Bilateral edema of the hands and wrists is noted, but not of the lower extremities. Peripheral pulses are equal bilaterally in the upper extremities, but weak in the left foot (1+) as compared to the right foot with a 2+ peripheral pulse. Normal S1, S2 heart sounds noted.
RESPIRATORY (2 points): **Accessory muscle use: Y☐ N ☒** **Breath Sounds: Location, character** **ET Tube:** **Size of tube:** **Placement (cm to lip):** **Respiration rate:** **FiO2:** **Total volume (TV):** **PEEP:** 12 cm H_2O **VAP prevention measures:**	Bilateral rhonchi are noted with auscultation at the base of the lungs, without accessory muscle use. Positive inspiratory pressure in being applied via mechanical ventilation with a respiratory rate of 16 and oxygen concentration of 60%. The tube size is 8.0 and placement at the lip is at the 27 cm mark. VT_i is 491 while VT_e is 499, although this value is constantly fluctuating.
GASTROINTESTINAL (2 points): **Diet at home:** **Current Diet** **Height:** 179.1 cm (5’ 10.5”) **Weight:** 93 kg (205 lbs) **Auscultation Bowel sounds:** **Last BM:** 11/9/20 **Palpation: Pain, Mass etc.:** **Inspection:** **Distention:** **Incisions:** **Scars:** **Drains:** **Wounds:**	Patient is on a regular diet at home. The current diet is NPO with enteral feedings and vitamin supplementation via NG tube, with length noted to be 55 cm. The rate of enteral feedings is 25 mL/hr. Bowel sounds are hypoactive upon auscultation.

Ostomy: Y ☐ N ☒ **Nasogastric: Y ☒ N ☐** **Size: 14 Fr** **Feeding tubes/PEG tube Y ☐ N ☒** **Type:**	
GENITOURINARY (2 Points): **Color:** **Character:** **Quantity of urine:** **Pain with urination: Y ☐ N ☒** **Dialysis: Y ☐ N ☒** **Inspection of genitals:** **Catheter: Y ☒ N ☐** **Type:** Foley **Size:** 14Fr **CAUTI prevention measures:**	Client's urine is dark yellow but little to no output is noted between 0700-0900. Patient was checked for incontinence and catheter appeared patent with some redness and breakdown of the creases of the groin noted. Catheter was placed 10/30/20. CAUTI prevention measures per facility protocol include incontinence care as needed and catheter care once per shift.
MUSCULOSKELETAL (2 points): **Neurovascular status:** **ROM:** **Supportive devices:** **Strength:** **ADL Assistance: Y☒ N ☐** **Fall Risk: Y ☒ N☐** **Fall Score:** **Activity/Mobility Status:** Bedrest **Independent (up ad lib)** ☐ **Needs assistance with equipment** ☐ **Needs support to stand and walk**☐	The client is very weak with evidence of poor circulation, as evidenced by increased capillary refill and pallor. Client is on bed rest so no assistive devices are in use at this time. Morse Fall Score: 50 Patient is a fall risk if out of bed or transferred, fall precautions should be implemented.
NEUROLOGICAL (2 points): **MAEW: Y ☐ N☒** **PERLA: Y ☒ N☐** **Strength Equal: Y ☒ N ☐ if no -** **Legs ☐ Arms ☐ Both ☐** **Orientation:** **Mental Status:** **Speech:** **Sensory:** **LOC:**	Strength equal but weak. Little independent movement of extremities is observed, likely due to the combined effects of weakness and sedation. Client is alert and oriented x2. Verbal communication is limited but client is using nonverbal and hand motions to communicate needs. Without stimulation, patient quickly lapses into periods of sleep.
PSYCHOSOCIAL/CULTURAL (2 points): **Coping method(s):** **Developmental level:** **Religion & what it means to pt.:** **Personal/Family Data (Think about home**	Wife and daughter seem to be very involved in the client's care, requesting frequent updates and readily available to take calls from hospital staff. The client is very distressed regarding his deterioration in health and is welcoming of physical and emotional support.

environment, family structure, and available family support):	

Vital Signs, 2 sets (5 points)

Time	Pulse	B/P	Resp Rate	Temp	Oxygen
11/10/20 0720	50	118/68	22	98.1°F (oral)	94%, PEEP: 12 mm H_20 FiO2 60%
11/10/20 0935	55	126/71	19	97.3°F (oral)	95%, PEEP: 12 mm H_20 FiO2 60%

Vital Sign Trends/Correlation:

Vital signs are stable, however the heart rate is low and will require that metoprolol be held until heart rate is 60 bpm or greater. The oxygen saturation was fluctuating between 93-95%, which is concerning given that the client is ventilated, however there is also the history of COPD underlying COVID-19 related pneumonia.

Pain Assessment, 2 sets (2 points)

Time	Scale	Location	Severity	Characteristics	Interventions
11/10/20 0720	Numeric (0-10)	N/A	0	N/A	N/A
11/10/20 0935	Numeric (0-10)	N/A	0	N/A	N/A

IV Assessment (2 Points)

IV Assessment	Fluid Type/Rate or Saline Lock
Size of IV: **Location of IV:** **Date on IV:** **Patency of IV:** **Signs of erythema, drainage, etc.:** **IV dressing assessment:**	N/A
Other Lines (PICC, Port, central line, etc.)	
Type:	PICC, triple lumen placed 11/2/20

Size: **Location:** **Date of insertion:** **Patency:** **Signs of erythema, drainage, etc.:** **Dressing assessment:** **Date on dressing:** **CUROS caps in place: Y ☒ N ☐** **CLABSI prevention measures:**	5 French Right basilic vein, medial side of the arm The line is patent and flushes well. No evidence of erythema, warmth, or pallor are associated with the insertion site or extremity. The dressing is clean, dry, and intact. The date on the dressing is listed as 10/9/20. CLABSI prevention measures follow recommended guidelines of CHG bath once per shift.

Intake and Output (2 points)

Intake (in mL)	Output (in mL)
I.V. Fluids = 424.2 mL	Urine = 330 mL

Nursing Care

Summary of Care (2 points)

Overview of care: A head to toe assessment was performed with a focus on cardiac and respiratory function. The morning medications due were administered (allopurinol, docusate sodium, a vitamin preparation, and pantoprazole). Pastoral and family consults were initiated based on patient distress, and emotional support was provided through verbal encouragement, hand-holding, and orientation.

Procedures/testing done: Daily chest x-rays are currently ordered for this patient as well as several labs, primarily a CMP and CBC to monitor for electrolyte changes and signs/symptoms of infection.

Complaints/Issues: The patient reports no physical pain but is psychologically distressed. He frequently pointing to the ceiling and used nonverbal indicators to communicate that he wanted the ventilator out and that he wanted to go up, presumably to heaven.

Vital signs (stable/unstable): Vital signs were stable for the period of the clinical period. While two instance of collection were recorded previously, the patient is on continuous monitoring of blood pressure, heart rate, and pulse oximetry, which also remained stable and within normal limits.

Tolerating diet, activity, etc.: The patient is currently on prescribed bed rest related to deterioration. The client is NPO and receiving enteral feedings with a lack of frequent diarrhea, which means that the rate and composition of the feedings are likely well regulated. He is not refusing pharmacological or life-saving interventions at this time, despite protests that seem to focus primarily on the ventilator.

Physician notifications: The physician was on the unit as we assessed the patient and administered medications, he was notified of the patient's emotional deterioration and poor coping. We also advised that a pastoral consult and contact with wife and daughter were being pursued. At this time, patients are still able to visit with patients in recovery from COVID so the importance of a visit with the patient was stressed to family members.

Future plans for patient: Current recommendations include focusing on coping and perhaps initiating a psychology consult if poor coping continues to be observed and communicated by the patient. The primary physiological focus remains protecting and improving lung integrity and function, in preparation for a trial with the patient extubated. At this point, the focus will shift to physical rehabilitation.

Discharge Planning (2 points)

Discharge location: The client's prognosis is poor given the functionality of the lungs. The client will also have a significant challenge at his age with the level of debilitation he has experienced in returning to his home, particularly with the patient care challenges posed to

family members and the need for significant physical and occupational rehab. Therefore, discharge to a skilled nurse facility or an inpatient rehab unit is the best option for this client.

Home health needs (if applicable): The client will almost certainly require oxygen therapy in the home or facility given the current level of infiltration and function of the lungs.

Equipment needs (if applicable): The client will require a mobility aid, such as a walker or wheelchair, as he improves on his physical condition. Other resources to maintain a safe environment, if not already in place, include a shower seat, grab rails, and occupational aids to assist in activities such as applying socks, for example.

Follow up plan: This patient will require frequent virtual or in person check-ups with a pulmonologist and/or respiratory therapist. The primary provider may be able to handle additional visits related to sequelae from the main disease process, such as acute kidney failure. The PCP may also need to make adjustments to current medications given the change in patient condition and indications of alterations in liver and renal function. Inpatient or outpatient therapy are essential to generate some improvement in physical function in pursuit of improved quality of life.

Education needs: This client was comparatively very healthy and active prior to contracting COVID-19. Therefore, education regarding the new needs for physical rehabilitation and changes in ability are crucial. The client will need to understand the importance of protecting the level of lung function that exists currently and understanding how to avoid any infections, which will make use of best practices such as hand hygiene, social distancing, and wearing a mask in public places. The client will have to resume a regular diet post-intubation, as tolerated, and support groups and spiritual resources should be identified as they may be of particular benefit to this client, who has expressed psychological distress.

Nursing Diagnosis (15 points)
Must be NANDA approved nursing diagnosis and listed in order of priority

Nursing Diagnosis • Include full nursing diagnosis with "related to" and "as evidenced by" components	**Rational** • Explain why the nursing diagnosis was chosen	**Intervention (2 per dx)**	**Evaluation** • How did the patient/family respond to the nurse's actions? • Client response, status of goals and outcomes, modifications to plan.
1. Impaired gas exchanged r/t damage to alveolar capillary membrane and change in lung compliance AEB bilateral infiltrates on chest x-ray and poor PaO_2 with and without mechanical ventilation	The client has the dual issues of history of COPD and COVID-19 related pneumonia, with chest x-rays revealing significant lung injury. Very few areas of the lungs are observed that aren't compromised.	**1.**Perform respiratory assessment (rate, depth, ease of breathing) with ausculatation for adventitious breath sounds q2h. **2.** Monitor the client's behavior and mental status for the onset of restlessness, agitation, confusion, or extreme lethargy that are outside the established baseline of the client with sedation.	Respiratory rate remains within normal limits and matches the settings associated with the ventilator. Little work of breathing is noted as evidenced by accessory muscle use, oxygen saturation reaches 95%, and the client doesn't exhibit any new alterations in level of consciousness.
3. Risk for trauma and infection r/t endotracheal intubation or tracheostomy	Clients who are mechanically ventilated are at risk for ventilator associated pneumonia and other infections,	**1**. Perform oral hygiene q4h and offer comfort measures, such as mouth swabbing, between instances of oral care. 2.Perform CHG bath	The clients retains current levels of respiratory function in the absence of indicators of respiratory infection, such as elevations in immune cell populations, fever, and

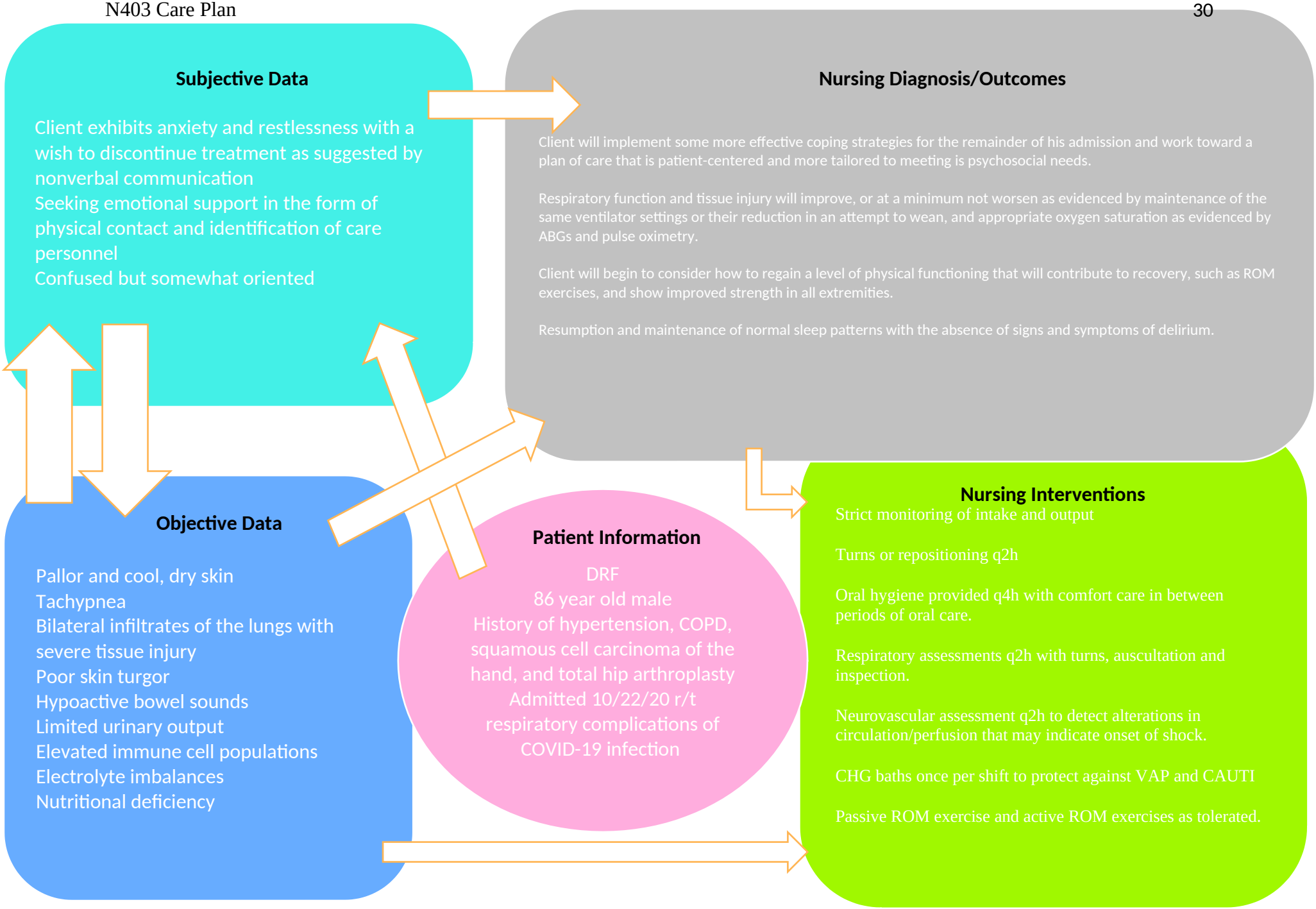
	and the patients neutrophils and lymphocytes are elevated.	once per shift to help reduce levels of MRSA present on the skin.	pleural effusion. The client fails to exhibit mucosal injury of the oral cavity or candidiasis.
4. Impaired physical mobility r/t ventilator dependency	The patient is hooked up to several pieces of equipment and unable to move his extremities well or re-position himself along with being sedated.	1. Perform RASS assessment once per shift and titrate sedatives as needed to maintain comfort but not oversedation. (RASS score - 2 to). 2 Assess ability to perform active ROM activities and encourage the patient to perform these once per shift if possible. Alternatively, perform pROM exercises with the patient and initiate a consultation with PT.	Weakness, particularly of the lower extremities, improves over the next several weeks with ROM exercises. Client begins to independently position his body and extremities.
5. Anxiety r/t threat to self-concept and health status and situational crisis AEB patient expression of distress and need for emotional support	The client was visibly anxious trying to communicate with us during assessments and medication administration, and was continually seeking to hold hands indicating the need for emotional support.	1. Initiate a collaborative assessment approach with psychology and attending physician to assess mental status. 2. Spend available time with the patient each shift to offer emotional support and conversation to help alleviate anxiety or	The client appears less distressed and communicates a desire to work toward improving health. Sedation is able to be titrated such that the client can tolerate the endotracheal tube but is alert and oriented x3 for any evaluations with psychology or the physician. The client is noted to have more relaxed posture and release of tension with

		intrusive thoughts.	physical touch and communication provided by the nurse. Family report less anxious behavior based on their baseline knowledge of the client.
6. Ineffective coping r/t inadequate opportunity to prepare for stressor AEB destructive behavior toward self, fatigue, and ineffective coping strategies	The client was unable to physically or psychologically prepare for the pandemic, and is expressing his desire to be extubated and pass away.	1. Use verbal and nonverbal therapeutic communication (empathy, active listening) to encourage client and family to express emotions such as sadness, guilt, and anger at each encounter. 2. Provide full information in a clear way to patient and family regarding care being delivered and prognosis and discuss how quality of life may be improved with future interventions, such as physical rehabilitation.	The clients expressions of not wanting to continue with ventilation and prescribed therapies declines with nursing interventions and outside interventions from pastoral care, physician, psychology, or family. Client indicates and understanding of care being delivered and is cooperative. Client expresses a desire to pursue extubation and physical rehabilitation when medically safe.

Other References (APA):

Ackley, B.J., Ladwig, G.B., Flynn Makic, M.B., Martinez-Kratz, M., Zanotti, M. (2020). *Nursing diagnosis handbook: An evidence-based guide to planning care* (12th ed.). Elsevier

Concept Map (20 Points):


Subjective Data
Client exhibits anxiety and restlessness with a wish to discontinue treatment as suggested by nonverbal communication
Seeking emotional support in the form of physical contact and identification of care personnel
Confused but somewhat oriented
Nursing Diagnosis/Outcomes
Client will implement some more effective coping strategies for the remainder of his admission and work toward a plan of care that is patient-centered and more tailored to meeting is psychosocial needs.
Respiratory function and tissue injury will improve, or at a minimum not worsen as evidenced by maintenance of the same ventilator settings or their reduction in an attempt to wean, and appropriate oxygen saturation as evidenced by ABGs and pulse oximetry.
Client will begin to consider how to regain a level of physical functioning that will contribute to recovery, such as ROM exercises, and show improved strength in all extremities.
Resumption and maintenance of normal sleep patterns with the absence of signs and symptoms of delirium.
Objective Data
Pallor and cool, dry skin
Tachypnea
Bilateral infiltrates of the lungs with severe tissue injury
Poor skin turgor
Hypoactive bowel sounds
Limited urinary output
Elevated immune cell populations
Electrolyte imbalances
Nutritional deficiency
Patient Information
DRF
86 year old male
History of hypertension, COPD, squamous cell carcinoma of the hand, and total hip arthroplasty
Admitted 10/22/20 r/t respiratory complications of COVID-19 infection
Nursing Interventions
Strict monitoring of intake and output
Turns or repositioning q2h
Oral hygiene provided q4h with comfort care in between periods of oral care.
Respiratory assessments q2h with turns, auscultation and inspection.
Neurovascular assessment q2h to detect alterations in circulation/perfusion that may indicate onset of shock.
CHG baths once per shift to protect against VAP and CAUTI
Passive ROM exercise and active ROM exercises as tolerated.