

Respiratory Failure – Kaitlyn Marcha

****Purple-Instructor Feedback**

Data Collection

History of Present Problem:

Juan-Carlos Ortiz is a 53-year old male who presented to the ER with increasing shortness of breath (SOB) over the last 2 days. He also reports several days of severe coughing, producing large amounts of brown sputum. He is accompanied by his wife.

Personal/Social History:

Juan-Carlos lives with his wife and two teenage children. He smokes a pack of cigarettes a day and consumes alcohol daily. His past medical history includes CAD, MI with stent placement, PVD, DM type-2, HTN, and HLD. Upon returning home from work today, his coughing and SOB became significantly worse. Although he was reluctant, his wife insisted they go to the ER.

What data from the histories is important & RELEVANT; therefore it has clinical significance to the nurse?

RELEVANT Data from Present Problem:	Clinical Significance:
Increased SOB over past 2 days Several days of severe coughing with large amounts of brown sputum	SOB leads to decreased oxygenation in the body and decreased tissue perfusion Brown sputum is indicative of infection or “old blood”
RELEVANT Data from Social History:	Clinical Significance:
1 PPD smoker Daily alcohol consumption CAD MI with stent placement PVD DM type II HTN HLD	Smoking causes lung damage increasing risk for infection and a delay in healing. Daily alcohol consumption can lead to withdrawal and putting the patient at risk for distress CAD and PVD is a risk for decreased tissue perfusion DM type II puts the patient at an increased risk for delayed healing and infection

Kaitlyn, excellent job identifying the relevant data from the patient’s presenting problem, as well as relevant data from his social history. Looking at the clinical significance, you are correct in thinking that the patient possibly has a respiratory infection. BSc

What is the RELATIONSHIP of your patient’s past medical history (PMH) and current meds?

(Which medications treat which conditions? Draw lines to connect.)

PMH:	Home Meds:	Pharm. Classification:	Expected Outcome:
CAD	Furosemide 20 mg daily	1. Furosemide: loop diuretic	1. reduce BP/remove fluid or decrease edema
PVD	ASA 81 mg daily	2. Aspirin: Salicylate	2. prevent ischemic attacks and recurring Mis
HTN	Enalapril 40 mg daily	3. Enalapril: ACE inhibitor	3. decrease BP
HLD	Simvastatin 40 mg daily	4. Simvastatin: HMG-	4. reduce cholesterol
DM Type-2	Plavix 75 mg daily		
	Metoprolol 50 mg BID		

	Apidra q6h Pioglitazone 15 mg daily	COA reductase inhibitor 5. Plavix: PLT aggregation inhibitor 6. Metoprolol: Beta blocker 7. Apidra: Pancreatic 8. Pioglitazone: thiazolidinediones	(total, LDL) 5. reduce chance of recurring MI 6. decrease BP and reduce angina 7. glycemic control 8. prevent hypoglycemia, decrease insulin resistance
--	--	--	---

Excellent job identifying the relationship of your patient's past medical history with his current medications. You also did a great job correctly identifying the pharmacologic classification of each medication, as well as the expected outcome. BSc

One disease process often influences the development of other illnesses. Based on your knowledge of pathophysiology, which disease likely developed FIRST that then initiated a "domino effect" in their life?

- Highlight what PMH problem likely started **FIRST** Hyperlipidemia (HLD)

Thinking about what you know about DM Type-2 and its pathophysiology, would you change your answer for this question at all? Remember, long term complications of DM includes disease of the large and small blood vessels in the body which leads to CAD, PVD, and HTN. Patients who have DM are also always at higher risk for infection because elevated glucose encourages bacterial growth. Therefore, it was the patient's diagnosis of DM that most likely influenced the development of the other illnesses. BSc

- Underline what PMH problem(s) **FOLLOWED** as domino(s) HLD, HTN, DM type II, CAD/PVD

Patient Care Begins:

Current VS:
T: 102.6
P: 122
R: 32
BP: 166/108
SpO2: 82% room air
Pain: 3 (chest)

What VS data is **RELEVANT** that must be recognized as clinically significant to the nurse?

RELEVANT VS Data:	Clinical Significance:
Temperature: 102.6 HR: 122 RR: 32 SpO2: 82% RA	These current vital signs are indicating that the patient has an infection and is in respiratory distress and the body is not receiving adequate oxygenation

Current Assessment:	
General Appearance:	Patient appears anxious, diaphoretic.
Respiratory:	Crackles throughout, respirations labored. Unable to lie flat.
Cardiac:	Edema to lower extremities. Tachycardic at 118. Radial pulses bounding, pedal pulses weak bilaterally.
Neuro:	Alert and oriented, equal hand grasps.

GI:	Abdomen soft/non-tender, bowel sounds audible per auscultation in four quadrants.
GU:	Patient reports low urine output the past week.
Integumentary:	Patient diaphoretic. Edema to lower extremities. Skin intact.

What assessment data is RELEVANT that must be recognized as clinically significant to the nurse?

RELEVANT Assessment Data:	Clinical Significance:
Anxious and diaphoretic Crackles throughout lungs with labored respirations Low urine output How is the edema to the patient's lower extremities clinically significant and relevant? BSc	Patient displays a state distress and anxiety from SOB Patient has a backup of fluid in the lungs; with brown sputum patient could have pneumonia This can be tied to the retention of fluid displayed through the crackles

Clinical Reasoning Begins:

What is the primary problem that your patient is most likely presenting with?

The primary problem as of now, is the patient showing sings of infection and respiratory distress.

What kind of respiratory infection do you think the patient has? BSc

What is the underlying cause/pathophysiology of this concern?

The underlying cause of this problem is the patient's respiratory infection (pneumonia). With him having the SOB for 2 days and the brown sputum for several days, the patient is most likely going to go into respiratory failure.

Excellent job! What is the pathophysiology of Pneumonia? BSc

What nursing priority(s) will guide your plan of care? (if more than one-list in order of PRIORITY)

As of now, my priority is to raise his oxygen levels. Put on a nonrebreather mask and attempt to keep oxygen above 92%, assess lung sounds, monitor for worsening condition such as cessation of breathing. Administer broad-spectrum antibiotic until organism is identified, antipyretic for elevated temperature, monitor BP/HR, take strict I/O.

What specific nursing diagnoses would guide you plan of care for this patient? BSc

What interventions will you initiate based on this priority?

Nursing Interventions:	Rationale:	Expected Outcome:
1. Assess airway and breathing (O ₂ , lung sounds, RR, use of accessory muscles, LOC) 2. Put on O ₂ via nonrebreather mask	1. to determine if patient is receiving adequate oxygenation and level of distress for intubation 2. to maintain adequate oxygenation	1. patient not showing any sign of distress with appropriate oxygenation 2. patient maintaining O ₂ above 92% 3. VS return to patient

<p>3. Obtain frequent VS (q15 min.) 4. Obtain EKG 5. Obtain CBC, BMP, and ABGs 6. Take chest x-ray 7. Obtain sputum specimen</p> <p>Great job, Kaitlyn. Are there any medications you would want to administer? What about Acetaminophen or an Antibiotic? Why might you want to do this? BSc</p>	<p>3. to determine any vital changes in patient baseline 4. to determine any lethal dysrhythmias 5. to determine if patient is in respiratory acidosis 6. to see if patient displays any infiltrates indicating pneumonia 7. to select appropriate antibiotic</p>	<p>baseline 4. Patient displaying NSR 5. Values WNL with patient displaying compensation 6. Chest x-ray shows no infiltrates or chronic changes 7. infecting bacteria is identified for antibiotic</p>
--	---	--

What body system(s) will you most thoroughly assess based on the primary/priority concern?

My main focus is the respiratory and cardiac systems performing frequent focused assessments

What is the worst possible/most likely complication to anticipate?

The most likely complication for this patient is acute respiratory failure leading to possible cardiac arrest. Great job! If we think the patient has an infection (Pneumonia), most likely the worst possible complication to anticipate is going to be that the patient goes into respiratory failure and possibly arrests. Excellent job! BSc

What nursing assessment(s) will you need to initiate to identify this complication if it develops?

Consistent inadequate levels of oxygen, low cardiac output or ejection fraction leading to arrest. Assess the neuro system for changes in mental status from lack of oxygenation. Perform frequent cardiac and respiratory assessments, monitor EKG, ABGs, and VS.

Medical Management: Rationale for Treatment & Expected Outcomes

Care Provider Orders:	Rationale:	Expected Outcome:
<p>Chest X-ray (CXR) Complete Blood Count (CBC) Basic Metabolic Panel (BMP) Arterial Blood Gas (ABGs) Furosemide 40 mg IVP Oxygen (titrate for SpO2>93) Piperacillin/tazobactam (Zosyn) 4.5 g q6h</p>	<p>1. To determine if patient has any chronic disease or pneumonia 2. To further verify that the patient has an infection. 3. To determine if the patient has any electrolyte imbalances 4. To determine if the patient is any respiratory acidosis 5. To remove the excessive fluid indicated by crackles in the lungs and edema in lower extremities 6. To determine if the patient</p>	<p>1. X-ray is clean with no infiltrates or chronic changes Thinking about what is going on with this patient, do we suspect that there will probably be some infiltrates present on the CXR? BSc 2. CBC comes back with normal ranges (especially WBC and other infection-related values) Again, wouldn't we expect the WBCs to be elevated? The patient is febrile along with several other signs and symptoms of an infection. BSc 3. Patient's electrolytes are WNL and indicate proper</p>

Place Foley catheter	<p>has adequate oxygenation throughout their body</p> <p>7. To fight the bacteria that is giving the patient pneumonia</p> <p>8. For strict I/O monitoring</p> <p>9. To determine if the patient's infection has gone systemic and they are at risk for septic shock</p> <p>10. From patient's lack of output, to determine if there is an infection in the GU system</p> <p>11. To combat the patient's fever of 102.6</p>	<p>kidney function</p> <p>4. Patient displays normal ranges with no evidence of respiratory acidosis</p> <p>5. Patient's lung sounds are clear with improvement of edema in lower extremities</p> <p>6. Oxygen remains consistently above 92% with little or no therapy</p> <p>7. Sputum is negative for any bacteria</p> <p>8. Urine output has increased with no evidence of pulmonary edema and the order indicates D/C of catheter</p> <p>9. Culture is negative in 2 different sites with no indication of sepsis</p> <p>10. No infection found</p> <p>11. Temperature is <100.4</p>
Blood Culture		
Urine Analysis/Urine Culture (UA/UC)		
Acetaminophen 650 mg. q6h for temp > 100.1		

Kaitlyn, great job! For the expected outcomes, think of this as what we would expect the patient to be showing before any treatment. You did a great job explaining what the medical interventions should successfully do for the patient. BSc

PRIORITY Setting: Which Orders Do You Implement First and Why?

Care Provider Orders:	Order of Priority:	Rationale:
Place Foley Catheter	<p>1. Oxygen Therapy</p> <p>2. CBC</p> <p>3. ABGs</p> <p>4. Chest x-ray</p> <p>5. Piperacillin/tazobactam 4.5g q6h</p> <p>6. Place Foley catheter</p>	<p>1. Prevent the patient from becoming hypoxic with no adequate perfusion to the brain or rest of the body</p> <p>2. To verify presence of infection</p> <p>3. To determine if patient is going into respiratory failure</p> <p>4. To verify patient has pneumonia showing infiltrates</p> <p>5. Begin fighting infection as soon as possible following appropriate antibiotic selection</p> <p>6. Strict I/O measurements</p>
Pipercillin/tazobactan 4.5 g q6h		
Oxygen (titrate for SpO2>93)		
ABGs		
CBC		
CXR		

Great job with your priority setting and rationales. BSc

Radiology Reports:

What diagnostic results are RELEVANT that must be recognized as clinically significant to the nurse?

RELEVANT Results:	Clinical Significance:
CXR: Infiltrates present in lower lobes bilaterally. Significant right and left pleural effusions.	This chest x-ray result presents the patient with fluid in the lungs (pleural effusions) and the infiltrates indicate the patient does have pneumonia. Excellent! BSc

Lab Results:

Complete Blood Count (CBC):	Current:	High/Low/WNL?
WBC (4.5-11.0 mm ³)	17.5	High
Hgb (13.5-17.5 g/dL)	9.8	Low
HCT (41-49%)	32	Low
Platelets (150-450 X 10 ³ µL)	175	WNL

What lab results are RELEVANT that must be recognized as clinically significant to the nurse?

RELEVANT Lab(s):	Clinical Significance:
WBC: 17.5 Hgb: 9.8 HCT: 32	Patient does have an infection This is a sign of poor oxygen in the blood (hypoxemia) Low RBCs in the blood's circulation

Great job! BSc

Basic Metabolic Panel (BMP):	Current:	High/Low/WNL?
Sodium (135-145 mEq/L)	135	Low but WNL
Potassium (3.5-5.0 mEq/L)	3.1	Low
Chloride (95-105 mEq/L)	95	Low but WNL
CO2 (Bicarb) (21-31 mmol/L)	25	WNL
Glucose (70-110 mg/dL)	188	High
Calcium (8.4-10.2 mg/dL)	7.8	Low
BUN (7-25 mg/dL)	42	High
Creatinine (0.6-1.2 mg/dL)	1.38	High

RELEVANT Labs:	Clinical Significance:
Potassium: 3.1 Glucose: 188 Calcium: 7.8 BUN: 42 Creatinine: 1.38	Patient is experiencing diuresis resulting in the loss of K ⁺ Lack of glycemic control or increase in presence of infection Patient has a history of alcoholism BUN and creatinine indicate poor kidney function

ABGs:	Current:	High/Low/WNL?

pH (7.35-7.45)	7.15	Low
pO2 (80-100)	72	Low
pCO2 (35-45 mmHg)	88	High
HCO3 (22-26)	25	High but WNL

RELEVANT Labs:	Clinical Significance:
pH: 7.15 PaO ₂ : 72 PaCO ₂ : 88 HCO ₃ : 25	A low pH indicates that the patient is acidotic Low PaO ₂ indicates the patient is hypoxic High PaCO ₂ indicates the patient hyperventilating (retaining CO ₂) Normal HCO ₃ indicates the kidneys are filtering appropriately Interpretation: Respiratory Acidosis Uncompensated Excellent job, that is correct! BSc

Clinical Reasoning-Lab Results:

Does your initial nursing priority or plan of care need to be modified in any way after obtaining these lab results?

POC does need to be modified. After receiving results, the provider needs to be notified to put in new orders for the patient.

What kind of orders would you anticipate the provider might want? BSc

What are your current nursing priorities that will determine your plan of care?

As of now, I need to maintain the patient's airway and keep his oxygen levels elevated. His antibiotic needs to be given, any intervention for patient's pain, monitor EKG in relation to BMP results (potassium/calcium)

Evaluation:

One hour later, all physician orders have been implemented.

Current VS:	Most Recent:
T: 102.2	T: 102.6
P: 134	P: 122
R: 34	R: 32
BP: 170/110	BP: 166/108
SpO ₂ : 80% on 10L via non-rebreather	SpO ₂ : 82% room air
	Pain: 3 (chest)

Physical assessment is unchanged with the exception of 500 mL dark yellow urine in the Foley drainage bag.

What clinical data is RELEVANT that must be recognized as clinically significant?

Relevant VS and Assessment Data:	Rationale:
T: 102.2 P: 134 RR: 34	When comparing the patient's last set of vital signs, the updated ones show no change in condition with a worsening oxygen level despite 100% O ₂ therapy

BP: 170/110 SpO ₂ : 80% on 10L via non-rebreather	
---	--

Has the status improved or not as suspected to this point?

At this point, the patient is not improving in condition.

Does your nursing priority or plan of care need to be modified in any way after this evaluation assessment?

POC does need to be modified after updated vital signs. With the patient showing a decrease in oxygen level despite therapy, I would recommend the patient to be intubated and put on a ventilator to prevent further damage.

Excellent job! BSc

Based on your current evaluation, what are your nursing priorities?

After evaluation, my priority is to get the patient appropriate oxygenation. With that being said a MET would need to be called to get appropriate support.

Great job! Yes, we need the physician immediately. BSc

Because you have not seen the level of improvement you were expecting in the medical interventions, you decide to update the physician and give the following SBAR:

Situation:
Hi, my name is Kaity and I am the nurse caring for Juan-Carols Ortiz. His oxygenation level currently is 80% on 100% oxygen via non-rebreather mask with continuously dropping oxygen saturation levels. Patient has a history of smoking the past 38 years at a pack a day, has HTN, HLD, DM II, CAD/PVD, and an MI with stent placement. He is a full code and allergic to codeine and acetaminophen. Most recent VS are as follows: T: 102.6 despite acetaminophen 650 mg HR: 134 RR: 34, BP: 170/110. Chest x-ray revealed right and left pleural effusions with infiltrates in the lower bases bilaterally.
Background:
Patient came to the ER about an hour ago with severe SOB, coughing, and large amounts of brown sputum. Oxygen levels were 82% on RA with RR of 32. Labs were drawn and ABGs revealed the patient is in respiratory acidosis; pH: 7.15 PaO ₂ : 72 PaCO ₂ : 88 and HCO ₃ : 25.
Assessment:
Current VS are as follows: T: 102.2 HR: 134 RR: 34 BP: 170/110 SpO ₂ : 80% on 10L via non-rebreather. Patient has had an output of 500 mL dark yellow urine and he is AO x3. What treatments have already been put in place for this patient? BSc
Recommendation:
I would recommend intubation for this patient has his oxygen levels keep dropping despite therapy.

The physician agrees with your concerns and decides to intubate the patient to protect his airway and improve his oxygenation. The patient is successfully intubated with an **8 mm**

ET tube, 24 cm. at the teeth. The ventilator was set to Assist Control with the following settings: tidal volume 500, rate 12, FiO₂ 40%, PEEP 5. An **OG tube was also placed.** There is a **new order for ABGs to be drawn in a half-hour.**

Following intubation:

Current VS:	Most Recent:
T: 100.8	T: 102.2
P: 86	P: 134
R: 16	R: 34
BP: 145/90	BP: 170/110
SpO ₂ : 99% on mechanical ventilation	SpO ₂ : 80% on 10L via non-rebreather

ABGs:	Current:	Most Recent:
pH (7.35-7.45)	7.25	7.15
pO ₂ (80-100)	88	72
pCO ₂ (35-45 mmHg)	52	88
HCO ₃ (22-26)	24	25

Has the status of the patient improved or not as expected to this point?

At this point, the patient is showing significant improvement.

What data supports this evaluation assessment?

VS: T: 100.8 HR: 86 RR: 16 BP: 145/90 SpO₂: 99% on mech. vent. ABGs are as follows: pH: 7.25 PaO₂: 88 PaCO₂: 52 HCO₃: 24 → interpretation: patient is still a little acidic but showing improvement

Your patient who is still in the ED is now being transferred to the intensive care unit (ICU) for close monitoring. Effective and concise handoffs are essential to excellent care and if not done well can adversely impact the care of this patient. You have done an excellent job to this point, now finish strong and give the following SBAR report to the nurse who will be caring for this patient:

Situation: Juan-Carols Ortiz is a 53 y/o male from home with his wife. He came to the ER with severe SOB and severe coughing with large amounts of large brown sputum. He was showing poor oxygenation despite therapy resulting in him being intubated with an 8 mm ET at 24 cm at the teeth with an OG tube also being place. Current ventilation settings are as follows: TV: 500 RR: 12 FiO ₂ : 40% PEEP: 5. He has had no complaints of pain.
Background: Juan is a 53 y/o male who lives at home with his wife and 2 teenage kids who have been very involved. He is a full code and has an allergy to codeine and acetaminophen. He has a history of smoking a pack/day for 38 years with occasional marijuana use, consumes alcohol daily,

has HTN, HLD, DM II, CAD/PVD, MI with stent placement.
Assessment:
Last VS check: T: 100.8 HR: 86 BP: 145/90 RR: 16 Last ABG results: pH: 7.25 PaO ₂ : 88 PaCO ₂ : 52 HCO ₃ : 25 Urine output of 500 mL of dark yellow urine following diuretic treatment
Recommendation:
Patient is now stable, continue to monitor repeat ABGs and vital signs with a very focused respiratory and GU assessment as well as mental status changes.

Education Priorities/Discharge Planning

What will be the most important discharge/education priorities you will reinforce with their medical condition to prevent future readmission with the same problem?

With the patient being intubated and sedated, I would still explain every aspect of care to him as he can still hear and feel what is going on. I would have conversations and ask the patient questions allowing him to answer yes/no by blinking once for no and twice for yes or the nodding of his head. With the patient being sedated, simple literacy needs to be used for proper comprehensions. With a patient not being able to be as involved, it's important to incorporate the family members in the patient's care as they are more interactive than the patient is.

What education would we give the patient at discharge specifically when he is able to receive education? BSc

What are some practical ways you as the nurse can assess the effectiveness of your teaching with this patient?

With the patient being intubated and sedated, it's important to involve the patient's family in education. Breaking up sessions into shorter periods allow for increased comprehension. If the patient is able, in this situation reading material would be accurate as the teach-back method would not necessarily work until the patient is extubated.

Caring and the "Art" of Nursing:

What is the patient likely experiencing/feeling right now in this situation?

I can imagine this patient is pretty scared with being on a ventilator and not being able to breathe on his own. Even though he is not able to communicate vocally, it's important to make yourself present with the patient even if it is just sitting with him and holding his hand so he knows someone is there taking care of him.

What can you do to engage yourself with this patient's experience, and show that he/she matters to you as a person?

Therapeutic touch and communication are a huge aspect in caring for a patient who is sedated and intubated. Explaining every aspect of the patient's care to them and allowing them time to register what you're saying before you do it lets the patient know you respect them and won't do anything they don't agree to. Once the patient is extubated, it is important to give that patient the one-one time they missed when they were intubated. So it's important to sit down with them and address any questions or concerns they have during that time.

Kaitlyn,

You did an excellent job with this unfolding case study. Please take the time to revisit the areas in which I identified there may have been some missing information, or more information that could be added after further deliberation and deeper thinking. This will greatly benefit you and your care in the clinical setting in the future. Keep up all your hard work! BSc