HEART FAILURE

VIRTUAL VENTILATOR INCLUDED

Estimated Time: 40 minutes • Debriefing Time: 40 minutes

Scan to Begin

Patient Name: Hector Fernandez

SCENARIO OVERVIEW

Hector Fernandez is a 62-year-old male patient with a history of heart failure who was brought to the Emergency Department via EMS. He subsequently arrested, was resuscitated, and is now in the ICU on a mechanical ventilator. In State 1, as students are completing their focused assessments, they can assess the patient's ventilator settings against the Provider Orders by entering the Ventilator tab and viewing the ARISE Virtual Ventilator. Students should notice that the settings do not match the orders and call the Respiratory Therapist. In State 2, the ABG's result. Students should evaluate the ABG's and call both the Provider for new orders and the RT to make the changes. In State 3, the Respiratory Therapist has made the ordered ventilator changes and students can reassess the ARISE Virtual Ventilator settings.

LEARNING OBJECTIVES

1. Incorporate evidence-based practice while caring for a patient with heart failure
2. Monitor and care for a patient on a ventilator
3. Participate in multidisciplinary communication while providing effective health care

CURRICULUM MAPPING

WTCS NURSING PROGRAM OUTCOMES

- Implement one's role as a nurse in ways that reflect integrity, responsibility, ethical practices, and an evolving professional identity as a nurse committed to evidence-based practice, caring, advocacy and quality care
- Demonstrate appropriate written, verbal, and nonverbal communication in a variety of clinical contexts
- Integrate social, mathematical, and physical sciences, pharmacology, and pathophysiology in clinical decision making
- Provide patient centered care by utilizing the nursing process across diverse populations and health care settings
- Minimize risk of harm to patients, members of the healthcare team and self through safe individual performance and participation in system effectiveness
- Lead the multidisciplinary health care team to provide effective patient care throughout the lifespan
- Use information and technology to communicate, manage data, mitigate error, and support decision-making

NURSING FUNDAMENTALS

- Maintain a safe, effective care environment for adults of all ages
- Use appropriate communication techniques
- Adapt nursing practice to meet the needs of diverse patients in a variety of settings

COMPLEX HEALTH ALTERATIONS II

- Evaluate nursing care for patients with critical/life threatening situations

SIMULATION LEARNING ENVIRONMENT & SET-UP

PATIENT PROFILE

Name: Hector Fernandez

DOB: 09/06/19XX

Age: 62

MR#: 41219

Gender: Male

Height: 175 cm (5 ft 10 in)

Weight: 86.4 kg (190 lbs)

Allergies: Penicillin (Hives)

Admitting Diagnosis: Dehydration (E86.0)

Chronic Medical Conditions: Congestive heart failure (I50.9); Hypertension (I10); Hyperlipidemia (E78.5)

Code Status: Full code

Ethnicity: Hispanic

Spiritual Practice: Catholic

Primary Language: English

EQUIPMENT/SUPPLIES/SETTINGS

Environment

- Emergency department room with phone available

Patient

- Wearing a gown and intubated at start of scenario
- Cardiac monitoring in place
- QR codes placed in various anatomical locations on chest, heart and leg

Monitor/Simulator Settings

- Vitals: blood pressure 106/60, respiratory rate 12, heart rate 75, temp 38.5
- Lung sounds: fine crackles in posterior upper and lower lobes and anterior lower lobes
- Heart sounds: S3, regular rhythm

Supplies

- Equipment to obtain vitals including oxygen saturation

Medications

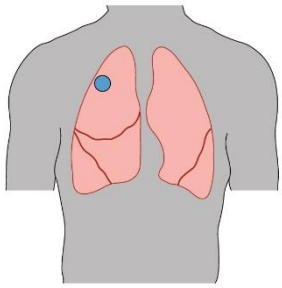
- See QR codes below for available medications

QR CODES

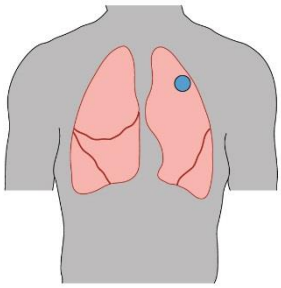
REPORT	PATIENT	LEG	FACILITATOR
PATIENT ID	HEART	FUROSEMIDE IV	ENOXAPARIN
FAMOTIDINE IV			

CHEST QR CODES

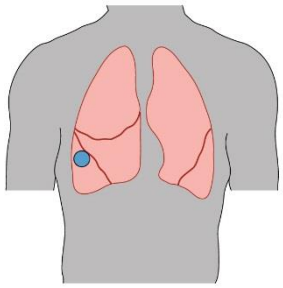
Cut along the dotted lines to create a folded QR code for each anatomical location. Fold each section along the solid line to create a bi-fold of the diagram and QR code, then apply to the simulator in the appropriate anatomical location.



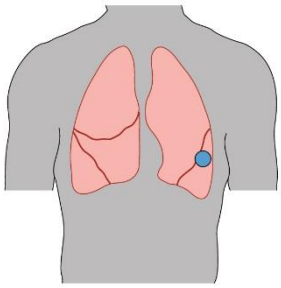
ANTERIOR 2



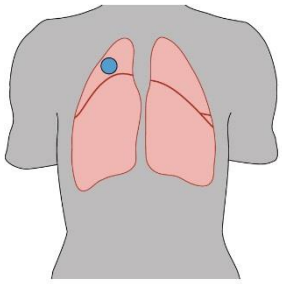
ANTERIOR 3



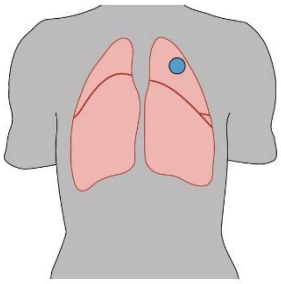
ANTERIOR 6



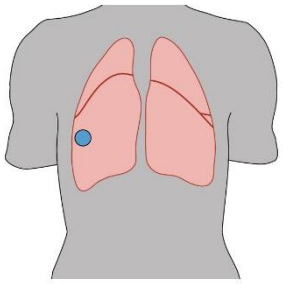
ANTERIOR 7



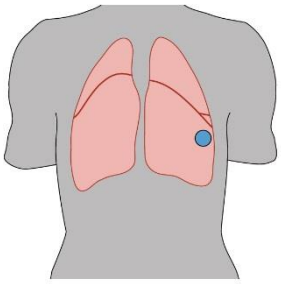
POSTERIOR 0



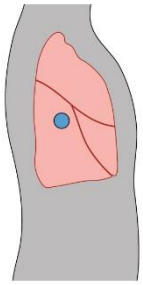
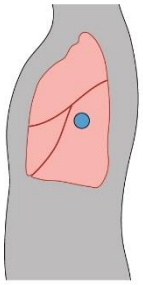
POSTERIOR 1



POSTERIOR 4



POSTERIOR 5

	
RIGHT AXILLARY 1	LEFT AXILLARY 1

TEACHING PLAN

PREBRIEF

The facilitator should lead this portion of the simulation. The following steps will guide you through Prebrief.

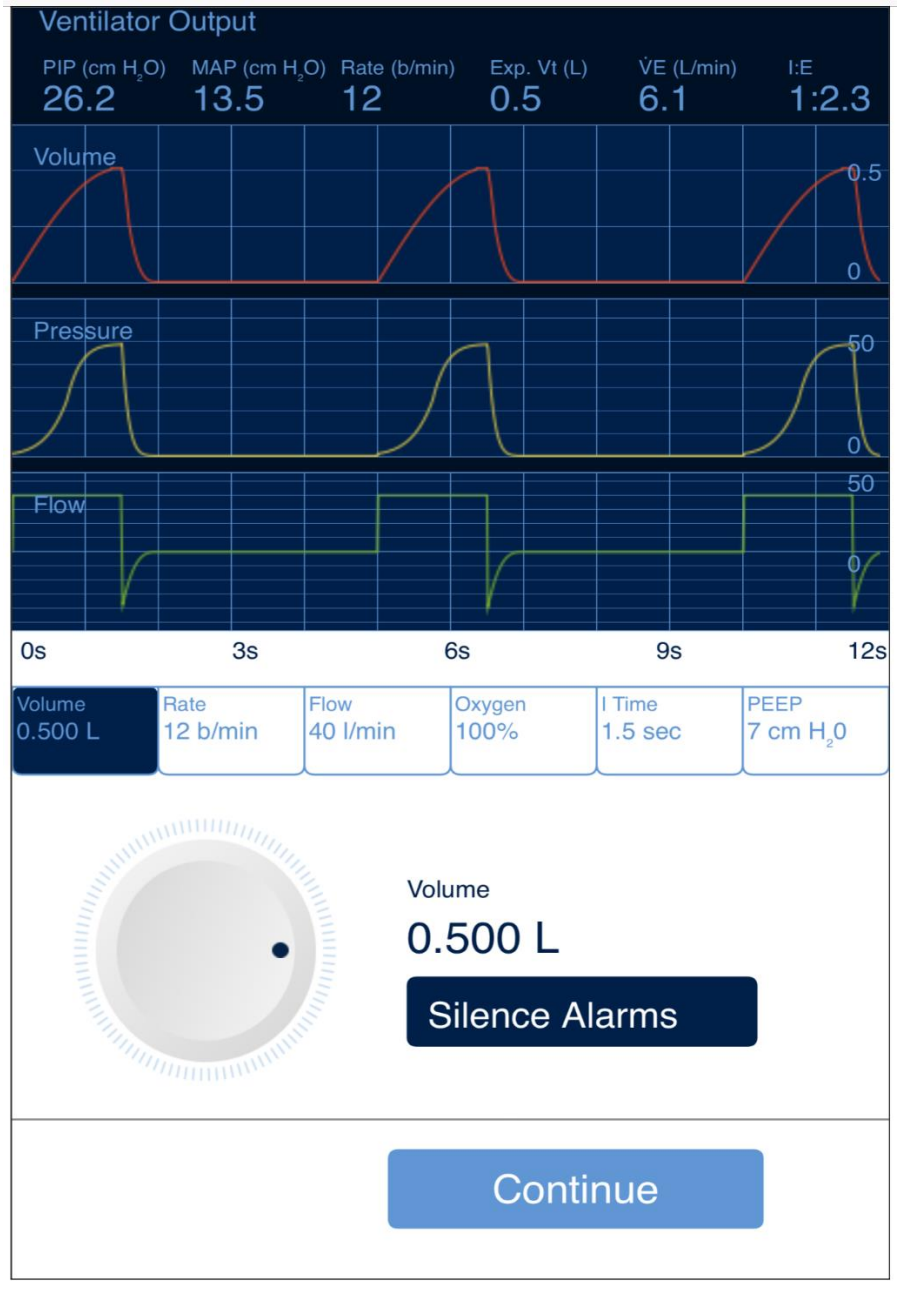
- Scan the **QR Code: "Scan to Begin"** while students are in Prebrief.
- "Meet Your Patient" (on iPad) and explain how the iPad works in the simulated learning environment including:
    - Explain how to use the iPad scanner and QR codes. Remind students that there are multiple QR codes in the simulation, but they should only scan them if they think it will provide data necessary for their assessment and evaluation of the patient.
    - Describe how a QR Code sound will work in the scenario. For the most authentic sound experience, student should use ear buds or the ARISE "stethoscope" for all QR Codes with the following symbol: . Example: **QR Code: Chest Anterior 1**
    - Medication Hyperlinks – Medications are underlined and hyperlinked to DailyMed, which is a medication reference housed by the National Library of Medicine. Students can click on these links during the simulation for up-to-date medication content, labels, and package insert information.
- Discuss the simulation "Learning Objective(s)" (on iPad) as well as any other Prebrief materials
- Get "Report" (on iPad)
    - Possible Facilitator Question
        - What are your clinical concerns after listening to report?
- View patient video (on iPad)
    - Possible Facilitator Question
        - What are your priorities after viewing the video of the patient?
- Review initial tabbed content:

HISTORY AND PHYSICAL

No reports available

VENTILATOR

The ARISE Virtual Ventilator is displayed here.



ORDERS

Provider Orders

Date	Time	Order
Today	30 minutes ago	Rapid Sequence Intubation by Respiratory Therapist
		Vent settings: Volume Control, rate of 12, tidal volume of 500, FiO2 100 % and PEEP of 7.
		CT scan of head STAT for potential anoxic brain injury
		Cardiopulmonary monitoring
		Portable CXR STAT PA and Lateral post intubation
		Cardiology Consult STAT
		Implement Ventilator Order Set
		Furosemide 80mg IVP STAT
		Foley catheter for strict I/O
		CBC, Chem 7, BNP, Liver Enzymes, TSH, Troponin STAT
		Transfer to ICU when bed available
		Obtain Advanced Directives if available
		----- James Emerson, M.D.

		VENTILATOR ORDER SET
		Nursing and Respiratory Care
		• Elevate head of bed at 30 degrees or greater
		• Evaluate need for kinetic bed therapy
		• Cuff pressure 20-25 cm H_2O
		• Circuit changes: only when visibly soiled or mechanically malfunctioning
		• Humidifiers or moisture exchangers: change only when visibly soiled or mechanically malfunctioning
		• Oral care:
		  ○ Assess oral cavity and lips every 6-8 hours and prn for hydration, lesions, thrush, pressure ulcers, infection
		  ○ Oral care and brush teeth for 1-2 minutes every 6-8 hours with 2% chlorhexidine
		  ○ Apply water-soluble lip balm every 6 -8 hours after oral care to maintain moisture
		• Use a dedicated suction line for endotracheal suctioning of respiratory secretions
		• Rotate position of oral endotracheal tube at least every 24 hours or use ETT holder that takes pressure off mouth
		• Assess patient daily for sedation reduction and readiness to extubate per agency guidelines
		Medications

		• Famotodine 20 mg IV every 12 hours for stress ulcer prophylaxis
		• Enoxaparin 40 mg subq every 24 hours for prophylaxis
		  ○ Notify provider if bleeding occurs
		  ○ Discontinue if platelet levels drop by 50% from baseline

MAR

Medication Administration Record

Scheduled		
Furosemide 80 mg IVP STAT	**Due Now**	**Last Given**
	Now	
Enoxaparin 40 mg subq	**Due Daily**	**Last Given**
	Now	
Famotidine 20 mg IV	**Due Daily**	**Last Given**
	Now	

DAILY RECORD

- No reports available

VITAL SIGNS

- Screen is open for entry;
- Simulator values set to: blood pressure 106/60, respiratory rate 12, heart rate 75, temp 38.5

PROGRESS NOTES

Progress Notes

Date/Time	Note

Today/ 20 minutes ago Respiratory Therapy	Brought to ER via EMS for acute exacerbation of chronic heart failure. Patient demonstrated decreased level of consciousness and STAT ABGs came back with pH 7.34, PaO2 78 and PaCO2 50. As preparing for immediate Rapid Sequence Intubation, patient became unresponsive with no pulse. 30 minutes of CPR was provided for Vfib arrest, with four shocks administered and IV Epi and Amiodarone given. He is currently tachycardic in the 120s with occasional PVCs. Rapid Sequence Intubation was performed using Etomidate and Succinylcholine. Has a #8 ETT secured on the right with a Hollister, 22 at the teeth. Vent settings are Volume Control, rate of 18, tidal volume of 500, FiO2 100 % and PEEP of 10. He has not received any sedation, and has no observable respiratory effort. Wife is on her way to the hospital. Discussed CT scan for potential anoxic brain injury with physician. --- Roxanne Jones, RRT

LABS-DIAGNOSTICS

Laboratory Results

Arterial Blood Gas (ABG)					
	40 mins ago			Units	Reference Range
pH	7.34				7.35-7.45
$PaCO_2$	50			mmHg	35-45
PaO_2	58			mmHg	80-100
HCO_3	25			mmol/L	22-26
Base Excess	1			mmol/L	0+/-3
SaO_2	80% on RA			%	

CBC with Differential					
	40 mins ago			Units	Reference Range
WBC	8.0			$x10^3uL$	F: 4.7-10.3/M: 4.5-10.5
RBC	5.1			$x10^6uL$	F: 4.0-4.9/M: 4.0-4.9
Hgb	10.3			g/dL	F:10.9-13.3/M:11.0-13.3

HCT	49.3			%	F: 33.0-39.6/M: 32.7-39.3
MCV	72.2			fL	F: 78.5-90.4/M: 76.5-90.6
MCH	27.8			Pg	25-33
MCHC	33			g/dL	31-37
RDW	12.5			%	F: 11.6-13.4/M: 12.0-14.0
Platelet	224			x10^{9}uL	F: 183-368/M: 194-364
MPV	9.8				7.4-10.4
Neutro	48				38-68
Lymph	30				25-54
Mono	0.5				0-0.8
Eos	4				1-5
Baso	1				0-2

Chem 7

	40 mins ago			Units	Reference Range
Glucose	100			mg/dL	Fasting 70-150
BUN	40			mg/dL	10-25
Creatinine	2.6			mg/dL	F: 0.4-1.4/M: 0.5-1.5
Sodium	156			mEq/L	135-145
Potassium	3.5			mEq/L	3.5-5.3
Chloride	100			mEq/L	98-108
Carbon Dioxide	25			mEq/L	23-27

BNP

	40 mins ago			Units	Reference Range
BNP	320			Pg/mL	Below 100 pg/mL: no heart failure. 100-300 pg/mL: suggest heart failure is present.

					Greater than 300 pg/mL: mild heart failure. Greater than 600 pg/mL: moderate heart failure. Greater than 900 pg/mL: severe heart failure

Liver Enzymes					
	40 mins ago			Units	Reference Range
ALT (SGPT)	45			u/L	4-36
AST (SGOT)	65			u/L	0-35

TSH					
	40 mins ago			Units	Reference Range
TSH	8			uU/L	2-10

Troponin					
	40 mins ago			Units	Reference Range
Troponin	**0.5**			*ng*/ml	<0.2

LEVEL

The State level is displayed

SCANNER

Students tap this tab to scan various QR codes within the scenario.

EXIT

The iPad reads, “Are you sure you want to exit? All data will be lost.”

- If “No” is selected, the iPad will return to the tabbed content.
- If “Yes” is selected, the iPad will let the student(s) exit and prompt them to complete an embedded 3-5 minute survey.

STATE 1

PATIENT ASSESSMENT

- Patient Overview
    - Patient is intubated and in the ICU following an arrest. Students should begin performing their focused assessments. When checking the ventilator settings against the Provider Orders, they should notice a discrepancy and call the Respiratory Therapist.
- Expected Student Behaviors
    - Introduce themselves, verify patient identity and scan **QR Code: Patient ID**
    - Communicate therapeutically with patient who is intubated
    - Obtain vital signs
    - Perform a focused respiratory physical assessment by scanning **QR codes: Chest** at various anatomical locations on anterior, medial and posterior chest
        - Students will hear crackles in all lung fields except the anterior upper lobes
    - Perform a focused cardiac assessment by scanning **QR code: Heart**
        - Students will hear an S3 heart sound
    - Perform a focused lower extremity assessment for edema by scanning **QR Code: Leg**
    - Verify mechanical ventilator settings match the orders
        - This is done by viewing the ARISE Virtual Ventilator that is located in the Ventilator tab on the iPad
    - Notify Respiratory Therapist of the discrepancy between ventilator settings and ventilator orders.
        - Option 1: RT examines the vent and is not sure why the settings are different – gets an ABG.
        - Option 2: RT is busy with a crashing patient and can't come. Asks the RN to notify the provider and get an ABG.
    - Administer ordered medications

        - Scan **QR Code: Furosemide IV**, **Enoxaparin**, and **Famotidine IV**
            - Must scan **QR Code: Patient ID** prior to scanning meds

- Technician Prompts
    - Nothing is needed from the patient.
    - When students call the Respiratory therapist:
        - Option 1: Play the role of the RT in person and go check the ventilator. Obtain an ABG.
        - Option 2: Play the role of the RT on the phone as you are busy with a crashing patient. Ask the student to notify the provider and get an ABG.
- Suggested Facilitator Questions
    - What are your priority focused assessments based on the report you received from the RN?
    - What is the RN's role when the settings on the ventilator do not match the current provider's orders?
    - What is the role of the respiratory therapist when a patient is on mechanical ventilation?
    - What potential complications will you monitor for when a patient is intubated and on mechanical ventilation?
    - What are your immediate concerns after assessing the patient?
    - To whom will you communicate your concerns – the respiratory therapist or the provider? Why?
- Tabbed iPad Prompts & Content Changes
    - Students will level up to State 2 after they have scanned the **QR code: Facilitator**

STATE 2

ABG RESULTS AND INTERPROFESSIONAL COMMUNICATION

- Patient Overview
    - State 2 begins with a plaque stating the labs have resulted. Students should view and interpret the ABG's and then call the Provider with the results. Once the orders are received, they should call the Respiratory Therapist to make the ordered changes.
- Expected Student Behaviors
    - Interpret new ABG's
    - Notify provider of abnormal findings using SBAR format
        - Once the Provider is called, students need to enter the Level tab and follow the instructions stating the provider was called.
        - This triggers a plaque stating there are new orders to review. These can be reviewed in the Orders tab.
    - Call the Respiratory Therapist to make the ordered ventilator changes
        - Once the Respiratory Therapist is called, students need to enter the Level tab and follow the instruction stating the Respiratory Therapist was called.
- Technician Prompts
    - Nothing is needed for the patient.
    - Role play to Provider when students call with ABG results.
        - Assure students use SBAR format.
        - Give the following orders: Change vent settings to: rate of 12, volume of 450, PEEP of 7 and O2 at 75%. Wean O2 to keep SpO2 > 90% and get repeat ABG's in AM.
            - State that you are entering the orders in the EMR
    - Role play the Respiratory therapist when students call with new ventilator orders.
- Facilitator Questions

- What information is important to consider when evaluating the patient's ABG in this situation?
- Interpret the ABG results, potential causes of these results, and potential solutions.

- Tabbed iPad Prompts & Content Changes
  - Students will progress to State 3 after they indicate that the Respiratory Therapist was notified in the Level tab.

ORDERS

Provider Orders

Date	Time	Order
Today	Now	Change vent settings to: Rate of 12, tidal volume of 450, Peep of 7
		and 75% O2. Wean O2 to keep SpO2 > 90%
		ABG's in AM ---------- James Emerson, M.D.
Today	60 minutes ago	Rapid Sequence Intubation by Respiratory Therapist
		Vent settings: Volume Control, rate of 12, tidal volume of 500, FiO2 100 % and PEEP of 7.
		CT scan of head STAT for potential anoxic brain injury
		Cardiopulmonary monitoring
		Portable CXR STAT PA and Lateral post intubation
		Cardiology Consult STAT
		Implement Ventilator Order Set
		Furosemide 80mg IVP STAT
		Foley catheter for strict I/O
		CBC, Chem 7, BNP, Liver Enzymes, TSH, Troponin STAT
		Transfer to ICU when bed available
		Obtain Advanced Directives if available
		----- James Emerson, M.D.
		VENTILATOR ORDER SET *Nursing and Respiratory Care* • Elevate head of bed at 30 degrees or greater • Evaluate need for kinetic bed therapy

		• Cuff pressure 20-25 cm H_2O
		• Circuit changes: only when visibly soiled or mechanically malfunctioning
		• Humidifiers or moisture exchangers: change only when visibly soiled or mechanically malfunctioning
		• Oral care:
		  ○ Assess oral cavity and lips every 6-8 hours and prn for hydration, lesions, thrush, pressure ulcers, infection
		  ○ Oral care and brush teeth for 1-2 minutes every 6-8 hours with 2% chlorhexidine
		  ○ Apply water-soluble lip balm every 6 -8 hours after oral care to maintain moisture
		• Use a dedicated suction line for endotracheal suctioning of respiratory secretions
		• Rotate position of oral endotracheal tube at least every 24 hours or use ETT holder that takes pressure off mouth
		• Assess patient daily for sedation reduction and readiness to extubate per agency guidelines
		Medications
		• Famotodine 20 mg IV every 12 hours for stress ulcer prophylaxis
		• Enoxaparin 40 mg subq every 24 hours for prophylaxis
		  ○ Notify provider if bleeding occurs
		  ○ Discontinue if platelet levels drop by 50% from baseline

MAR

Medication Administration Record

Scheduled		
Enoxaparin 40 mg subq	**Due**	**Last Given**
	In 24 hours	10 minutes ago
Famotidine 20 mg IV	**Due**	**Last Given**
	In 12 hours	10 minutes ago
Discontinued		
Furosemide	Discontinued	Last Given
	10 minutes ago	10 minutes ago

LABS

Laboratory Results

Arterial Blood Gas (ABG)					
	10 mins ago	60 mins ago		Units	Reference Range
pH	**7.48**	**7.34**			7.35-7.45
$PaCO_2$	**30**	**50**		mmHg	35-45
PaO_2	**152**	**58**		mmHg	80-100
HCO_3	25	25		mmol/L	22-26
Base Excess	1	1		mmol/L	0+/-3
SaO_2	100% on Vent	**80**% on RA		%	

CBC with Differential					
	60 mins ago			Units	Reference Range
WBC	8.0			$x10^3uL$	F: 4.7-10.3/M: 4.5-10.5
RBC	5.1			$x10^6uL$	F: 4.0-4.9/M: 4.0-4.9
Hgb	**10.3**			g/dL	F:10.9-13.3/M:11.0-13.3
HCT	**49.3**			%	F: 33.0-39.6/M: 32.7-39.3
MCV	**72.2**			fL	F: 78.5-90.4/M: 76.5-90.6
MCH	27.8			pg	25-33
MCHC	33			g/dL	31-37
RDW	12.5			%	F: 11.6-13.4/M: 12.0-14.0
Platelet	224			$x10^9uL$	F: 183-368/M: 194-364
MPV	9.8				7.4-10.4
Neutro	48				38-68
Lymph	30				25-54
Mono	0.5				0-0.8
Eos	4				1-5
Baso	1				0-2

Chem 7					
	60 mins ago			Units	Reference Range
Glucose	100			mg/dL	Fasting 70-150
BUN	**40**			mg/dL	10-25
Creatinine	**2.6**			mg/dL	F: 0.4-1.4/M: 0.5-1.5
Sodium	**156**			mEq/L	135-145
Potassium	3.5			mEq/L	3.5-5.3
Chloride	100			mEq/L	98-108
Carbon Dioxide	25			mEq/L	23-27

BNP					
	60 mins ago			Units	Reference Range
BNP	**320**			Pg/mL	Below 100 pg/mL: no heart failure. 100-300 pg/mL: suggest heart failure is present. Greater than 300 pg/mL: mild heart failure. Greater than 600 pg/mL: moderate heart failure. Greater than 900 pg/mL: severe heart failure

Liver Enzymes					
	60 mins ago			Units	Reference Range
ALT (SGPT)	**45**			u/L	4-36
AST (SGOT)	**65**			u/L	0-35

TSH					
	60 mins ago			Units	Reference Range
TSH	8			uU/L	2-10

Troponin					
	60 mins ago			Units	Reference Range
Troponin	**0.5**			*ng*/ml	<0.2

STATE 3

REASSESS VENTILATOR

- Patient Overview
    - State 3 begins with a plaque stating that the Respiratory Therapist has made the ordered vent changes. Students should reassess the ventilator settings.
        - Facilitator Note: This would be a good time to review ventilator settings and protocols.
- Expected Student Behaviors
    - Verify that the ventilator settings match the Provider Orders by accessing the ARISE Virtual Ventilator in the ventilator tab.
- Technician Prompts
    - Nothing is needed in this state.
- Facilitator Questions
    - Review the Ventilator settings. Do they match the current orders?
    - Interpret the current order "Wean O2 to keep SpO2 >90%." What are the RN's and the Respiratory Therapist's roles in performing this order?
    - Review the other orders under the Ventilator Order set. How is Ventilator Associated Pneumonia prevented?
    - Interpret the order "Assess patient daily for sedation reduction and readiness to extubate." What is the RN's role in this order?
    - Explain the purposes for the medications ordered and related monitoring for each.
- Tabbed iPad Prompts & Content Changes:
    - Scan **QR Code: Facilitator** to exit.

DEBRIEF

SUGGESTED QUESTIONS

1. Reaction: “How do you feel this scenario went?” (Allow students to vent their emotional reactions before delving into learning objectives.)
2. Review understanding of learning objectives: Incorporate evidence-based practice while caring for a patient with heart failure
    a. Hector was intubated and placed on a mechanical ventilator due to respiratory distress associated with pulmonary edema related to his heart failure. What focused assessments and interventions are required after a patient is intubated and placed on a ventilator?
    b. How did you prioritize your care after assessing your patient? If you could “do over,” is there anything you would change?
3. Review understanding of learning objectives: Monitor and care for a patient on a ventilator
    a. Explain the nurse’s role when caring for a patient on a ventilator.
    b. Interpret the second set of ABGs and potential causes of these results.
    c. Outline the steps for weaning a patient off a ventilator. Why is this a priority of care?
    d. Outline the steps for assessing for sedation reduction when a patient is on a ventilator. Why is this a priority of care?
    e. What evidence-based interventions are important to implement to prevent ventilator associated pneumonia?
    f. If you could “do over,” what would you change about your therapeutic communication with a patient on a ventilator?
4. Review understanding of learning objectives: Participate in multidisciplinary communication while providing effective health care
    a. What is the role of the nurse and the respiratory therapist when caring for a patient is on a ventilator?
    b. What information is important to share between the nurse and the respiratory therapist when collaboratively caring for a patient on a ventilator?

   c. How will you decide whether to contact the respiratory therapist or the provider when caring for a patient on a ventilator?

5. Tie the scenario to learning objective: Develop a nursing plan of care for a patient on a ventilator.
   a. Identify 3 priority nursing problems for Hector.
   b. Create a patient centered goal for each nursing problem you identified.
   c. Discuss focused assessments for each nursing problem.
   d. Discuss nursing interventions for each nursing diagnosis.
   e. Re-evaluate the simulation in terms of the nursing process; what was actually accomplished? What could be improved in the future?
6. Summarize/Take Away Points: "In this scenario you care for a patient who was intubated and placed on a ventilator shortly after being brought into the Emergency Department for acute shortness of breath secondary to heart failure. What is one thing you learned from participating in this scenario that you will take into your nursing practice?" (Ask each student to share something unique from what the other students share.)

NOTE: Debriefing technique is based on INASCL Standard for Debriefing and NLN Theory-Based Debriefing by Dreifuerst.

SURVEY

Print this page and provide to students.

Students, please complete a brief (2-3 minute) survey regarding your experience with this ARISE simulation. There are two options:

1. Use QR Code: Survey
    a. Note: You will need to download a QR Code reader/scanner onto your own device (smartphone or tablet). There are multiple free scanner apps available for both Android and Apple devices from the app store.
    b. This QR Code will not work in the ARIS app.

SURVEY

2. Copy and paste the following survey link into your browser.
    a. https://ircvtc.co1.qualtrics.com/SE/?SID=SV_6Mwfv98ShBfRnBX

CREDITS

Heart Failure Patient Education handout from American Heart Association, Get with the Guidelines HF Clinical Tools Library. Downloaded from http://www.heart.org/HEARTORG/Professional/GetWithTheGuidelines/GetWithTheGuidelines-HF/Get-With-The-Guidelines-HF-Clinical-Tools-Library_UCM_305817_Article.jsp#.WVZ7a03fPIU

Medication information from National Library of Medicine: Daily Med at http://dailymed.nlm.nih.gov/dailymed/

Heart and lung sounds used with permission from Thinklabs Medical, LLC, Centennial, CO at www.thinklabs.com

Edema picture from https://en.wikipedia.org/wiki/Heart_failure

Ventilator Associated Pneumonia. Cambridge, Massachusetts: Institute for Healthcare Improvement; [2017] at www.IHI.org

REFERENCES

Dreifuerst, Kristina Thomas (2012). Using debriefing for meaningful learning to foster development of clinical reasoning in simulation. Journal of Nursing Education, 51(6), 326-333. doi:http://dx.doi.org/10.3928/01484834-20120409-02

Hou, P, Baez, A. (2017). Mechanical Ventilation of adults in the emergency department. In: UptoDate, Walls, R. (Ed), UptoDate, Waltham, MA. (Accessed on January 1, 2018).

International Nursing Association for Clinical Simulation and Learning. (2013). Standards of best practice: simulation. Retrieved from: http://www.inacsl.org/files/journal/Complete%202013%20Standards.pdf

Yancy CW, Jessup M, Bozkurt B, Butler J, Casey DE Jr, Drazner MH, Fonarow GC, Geraci SA, Horwich T, Januzzi JL, Johnson MR, Kasper EK, Levy WC, Masoudi FA, McBride PE, McMurray JJV, Mitchell JE, PetersonPN, Riegel B, Sam F, Stevenson LW, Tang WHW, Tsai EJ, Wilkoff BL. (2013) ACCF/AHA guideline for the management of heart failure: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2013;128:e240–e327. **DOI: 10.1161/CIR.0b013e31829e8776**