HEART FAILURE

Estimated Time: 30 minutes • Debriefing Time: 30 minutes

Scan to Begin

Patient Name: Hector Fernandez

SCENARIO OVERVIEW

Hector Fernandez is a 62-year-old male patient with chronic heart failure. He was admitted to the hospital early today for dehydration, for which he received IV Fluids. Students should recognize that he is demonstrating symptoms of fluid overload and notify the physician. This scenario also simulates an interdisciplinary component, with a video of a Respiratory Therapy report, and a progress note written by the Respiratory Therapist for the students to review.

In State 1, students view a video of the patient and concerned family member. They should assess the patient, interpret labs, recognize symptoms of fluid overload and notify the physician. When the provider call is completed, students should scan the **QR Code: Facilitator** to progress to State 2, which includes new orders for CXR, ECG, ABG and a STAT Respiratory therapy consult. When the students have completed implementation of these orders, the **QR Code: Facilitator** is scanned in order to progress to State 3. State 3 includes a video report from the Respiratory Therapist, a video of the patient refusing the BiPAP, and a video of the family member stating he doesn't like the mask. New orders are automatically received, and the students should administer IV Lasix and perform the associated evaluations.

LEARNING OBJECTIVES

1. Prioritize nursing care for a patient with heart failure
2. Incorporate evidence-based practice while caring for a patient with heart failure
3. Relate chest X ray and echocardiogram results to patient condition
4. Administer cardiac related medications safely
5. Communicate therapeutically with a patient experiencing an acute health care event
6. Report complete, accurate, and pertinent information to the health care team

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

- Use the nursing process
- Adapt nursing practice to meet the needs of diverse patients in a variety of settings

PHARMACOLOGY

- Apply components of the nursing process to the administration of cardiovascular and respiratory systems drugs

NURSING HEALTH ALTERATIONS

- Plan nursing care for patients with alterations in the cardiovascular system

COMPLEX HEALTH ALTERATIONS 1

- Evaluate nursing care for patients with coronary artery disease
- Evaluate nursing care for patients with coronary artery disease

ADVANCED SKILLS

- Initiate IV therapy via peripheral access
- Administer IV push medications
- Interpret basic electrocardiogram patterns

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

Code Status: Full code

Admitting Diagnosis: Dehydration (E86.0)

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

Ethnicity: Hispanic

Spiritual Practice: Catholic

Primary Language: English

EQUIPMENT/SUPPLIES/SETTINGS

Environment

- Hospital room with phone available

Patient

- Wearing a gown, no oxygen on
- ID band with **QR: Patient ID**
- QR codes placed in various anatomical locations on chest, heart and leg

Monitor/Simulator Settings

- Vitals: Blood Pressure: 165/90, Pulse: 112, Respirations:32, Temperature:37.2 degrees Celsius, O2 sat 85% on room air
- Lung sounds: fine crackles
- Heart sounds: S3, regular rhythm

Supplies

- Equipment to obtain vitals including oxygen saturation
- BiPAP machine and mask (if available; otherwise QR Code provided)

- Urinal full of clear yellow simulated urine

Medications

- See QR codes below for available medications
- Furosemide IVP will be administered at the end of the scenario

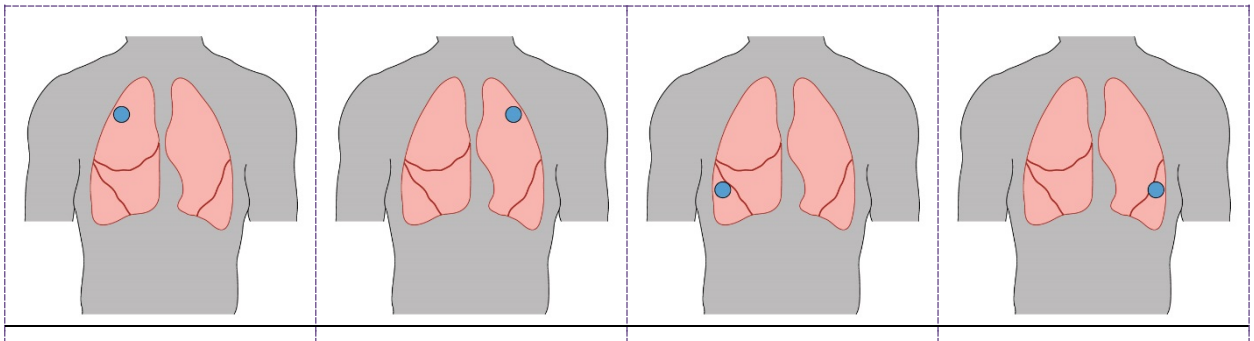
QR CODES

REPORT	PATIENT	LEG	FACILITATOR
FAMILY MEMBER	PATIENT ID	HEART	ECG
RT REPORT	PT EDUCATION	ECHOCARDIOGRAM	BIPAP
URINAL	ASPIRIN	FUROSEMIDE PO	METOPROLOL PO
LISINOPROL PO	ATORVASTATIN PO	FUROSEMIDE IV	0.9% NS WITH POTASSIUM IV

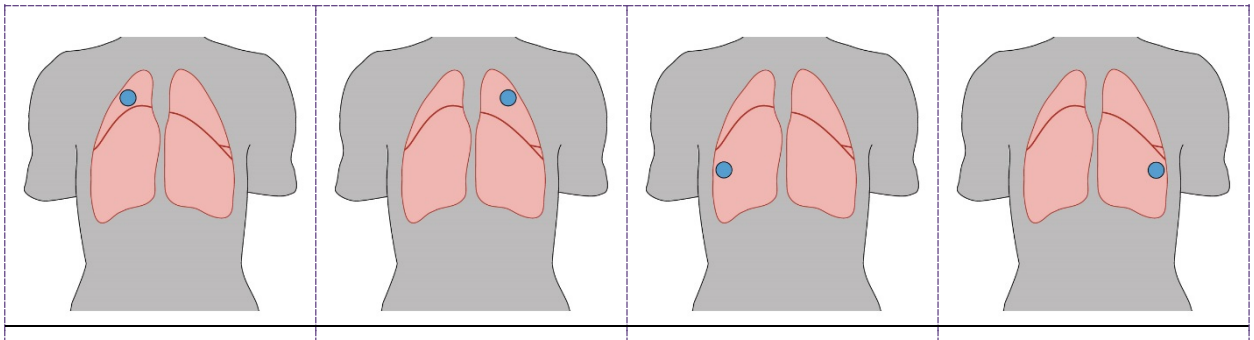
ACETAMINOPHEN
PO

CHEST QR CODES

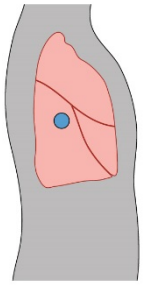
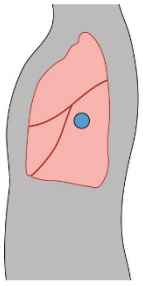
Cut along the dotted lines to create a folded QR code for each anatomical location. Fold each section along the solid line to create a bi-fold of the diagram and QR code, and then apply to the simulator in the appropriate anatomical location.



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?
- Play the "Patient" video
    - Possible Facilitator Question
        - What are your priority concerns after meeting the patient?
- Play the "Family Member" video
    - Possible Facilitator Question
        - Do you have any additional concerns after talking to the family member?

- Review initial tabbed content

HISTORY AND PHYSICAL

See H&P in Appendix A

ORDERS

Provider Orders

Date	Time	Order
Today	0030	Admit to Virtual Medical Center Cardiac Center unit
		IV Fluid bolus 0.9% NS with 20 mEq K+ at 500 ml/hour, followed by maintenance rate of 150 ml/hr
		Continuous Cardiac Monitoring
		12 lead STAT EKG PRN for new onset chest pain
		Administer O2 via nasal cannula PRN to maintain pulse oximetry at 95% or greater (notify health care provider if cannot maintain O2 sat >90%)
		Cardiac diet: 2g sodium, low cholesterol, low fat
		Weight on admission and daily weights
		Aspirin enteric coated 81mg one tab PO every day
		Furosemide 40mg PO every 12 hours
		Metoprolol 12.5 mg PO daily
		Lisinopril 10mg PO daily
		Atorvastatin 40 mg PO daily
		Acetaminophen 500 mg PO 2 tabs every 4 hours for pain or fever PRN
		CBC with differential, Chem 7, Magnesium, BNP, Liver Enzymes, TSH, Troponin
		Echocardiogram
		Physical therapy consult
		Consult with social worker regarding Advanced Directives
		Consult for cardiac rehabilitation on discharge
		On discharge, provide and document heart failure instructions: diet and fluid restrictions, activity, medications, daily weight recording, worsening symptoms, and follow-up appointment after discharge

		---- Dr. M. Cordoba, M.D

MAR

Medication Administration Record

Scheduled		
Aspirin 81 mg EC PO daily	**Due Today** 0800	**Last Given**
Furosemide 40 mg PO twice daily	**Due Today** 0800	**Last Given**
Metoprolol 12.5 mg PO daily	**Due Today** 0800	**Last Given**
Lisinopril 10 mg PO daily	**Due Today** 0800	**Last Given**
Atorvastatin 40 mg PO daily	**Due Today** 0800	**Last Given**
Continuous Infusion		
0.9% NS with 20 mEq K+ at 500 ml/hour for one hour, followed by maintenance rate of 150 ml/hour		**Started** On admission 12 hours ago
PRN		
Acetaminophen 500 mg PO PRN every 4 hours for pain or fever		**Last Given**

DAILY RECORD

Daily Record

Vitals	On admission				
Pulse	102				
Resp. Rate	22				
BP Systolic	85				
BP Diastolic	50				
Temp (°C)	37.4				
O2 Saturation (%)	95				
Applied Oxygen	RA				
Pain	2				

24 HR I & O (ml)	Today				
Input	4500 ml				
Output	1000 ml				
Total					

Daily Weight (kg)	On admission				
	86.4				

VITAL SIGNS

Screen is open for entry;

Simulator Values set to: HR 122, RR 35, BP 144/58, Temp 37.5, O2 Sat 85% on RA, Pain 0/10

PROGRESS NOTES

Not available

LABS

Laboratory Results

CBC with Differential					
	On admission			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	50				31-57
Lymph	40				35-61
Mono	5				4-7
Eos	4				2-4
Baso	1				0-1

Chem 7					
	On admission			Units	Reference Range
Glucose	100			mg/dL	Fasting 70-150
BUN	40			mg/dL	10-25
Creatinine	1.6			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					
	On admission			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					
	On admission			Units	Reference Range
ALT (SGPT)	45			u/L	4-36
AST (SGOT)	65			u/L	0-35

TSH					
	On admission			Units	Reference Range
TSH	8			uU/L	2-10

Troponin					
	On admission			Units	Reference Range
Troponin	0.1			*ng*/ml	<0.2

DIAGNOSTICS

ECHOCARDIOGRAM

Study Date: Today

Priority: Routine

In/out: Inpatient

Referring: Dr. Hospita, MD

History: History of heart failure

Reasons: Increased fatigue and recent falls

INTERPRETATION

General: A routine transthoracic echocardiogram was performed. Fully diagnostic study.

Aortic Valve: The aortic valve is normal and trileaflet.

Left Atrium: The left atrium is normal. LA M-mode: 3.3 cm.

Mitral Valve: The mitral valve is normal.

Right Atrium: The right atrium is normal.

Right Ventricle: The right ventricle is normal in size with normal function.

Tricuspid Valve: The tricuspid valve is normal. There is mild tricuspid regurgitation which is centrally directed, PASP= 27 mmHg, RAP=10mmHg.

Pulmonic Valve: The pulmonic valve is normal.

Pulmonary Artery: The pulmonary artery is normal.

Atrial Septum: The interatrial septum is normal.

Left Ventricle: The left ventricle is increased in size with decreased function. The ejection fraction is 39%.

Walls	Chamber	Systolic Function
IVSd: 1cm 0.6-1.1cm	LVIDd: 4.5cm 3.7-5.6 cm	FS: 47 %
IVSs: 1.4cm 0.8-2.0cm	LVIDdI: 2.24cm/m2	EF: 39%
PWd: 0.9cm 0.6-1.1cm	LVIDs: 2.4cm 1.8-4.2 cm	
PWs: 1.3cm 0.8-2.0cm	LVIDsI: 1.19cm/m2	
	RWT: 0.4 <0.42	

CONCLUSION

Left ventricle is enlarged with decreased ventricular function consistent with systolic heart failure with decreased ejection fraction of 34%. No regional wall motion abnormalities are noted in the left ventricle. Normal right ventricular size with normal function. Normal left atrium. Normal right atrium. Normal, trileaflet aortic valve. Normal mitral valve. Normal tricuspid valve. Normal PA pressure. Normal pulmonic valve.

Craig H. Scott, MD, FACC, FASE

IMAGING

Not available

ECG

Not available

PATIENT EDUCATION

A patient education handout on heart failure is available here and a printable version is available in Appendix B

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 was admitted to the medical surgical unit yesterday for dehydration related to diuretic therapy, and received IV Fluids. Upon assessing the patient, the students should recognize symptoms of increased pulmonary edema and notify the provider. After the expected behaviors are met, the Facilitator QR code should be scanned which causes the scenario to progress to State 2.
- Expected Student Behaviors
  - Introduce themselves to the patient
  - Verify patient identity with name and date of birth and scan **QR Code: Patient ID**
  - Communicate therapeutically regarding patient concerns
  - Obtain vital signs
  - Perform a general survey assessment on primary concerns
  - Perform a focused respiratory physical assessment by scanning **QR codes: Chest** at various anatomical locations on anterior, medial and posterior chest
    - Facilitator Note: Fine crackles are present in bilateral anterior and posterior lower lobes; bilateral medial lobes; and the upper right posterior lobe. The other lobes have normal lung sounds.
  - Perform a focused cardiac assessment by scanning **QR code: Heart**
    - Facilitator Note: An image of a heart with and without heart failure will display as an S3 sound occurs.
  - Perform a focused lower extremity assessment for edema by scanning **QR Code: Leg**
    - Facilitator Note: An image of a leg with stasis dermatitis appears
  - Document findings accurately
  - Position patient appropriately
  - Administer oxygen appropriately

  - May administer scheduled medications or decide to call provider first
  - Notify provider of abnormal findings using SBAR format
- Technician Prompts
  - Patient is feeling weak and has increased shortness of breath. He is speaking in 3 or 4 word phrases with heavy breathing.
  - Initial patient responses can include:
    - "I feel a little winded today."
    - If students do not respond immediately to report of dyspnea, continue to provide cues like "I can hardly catch my breath," "It wasn't this bad yesterday," "I must be catching a cold because today I have a cough," etc.
- Suggested Facilitator Questions:
  - What are possible causes of the patient's dyspnea?
  - What should be communicated to the provider immediately?
  - Can the nurse do anything immediately regarding the IV fluid therapy?
  - Using SBAR format, what are your "recommendations?"
  - The patient profile lists Hector's primary language as "English." Do you agree or disagree? Does this impact your nursing care in any way?
- Tabbed iPad Prompts & Content Changes
  - Students will level up to State 2 after they have scanned the **QR codes: Facilitator,** indicating they have performed the Expected Behaviors and notified the provider of their concerns.

STATE 2

NEW ORDERS RECEIVED

- Patient Overview
  - New orders are received from the provider for CXR STAT, ABGs STAT and Respiratory consult STAT
- Expected Student Behaviors
  - Call for STAT CXR and ABG
  - Review ABG results
    - When students tap on the Labs tab, they will be asked, “Have you called for ABG”
    - After they indicate “yes,” they will be able to view the ABG results
  - Review STAT CXR results
    - When students tap on the Imaging tab, they will be asked, “Have you called for CXR?”
    - After they indicate “yes,” they will be able to view the CXR results
  - Call for STAT Respiratory consult using SBAR format indicating urgency level
  - Obtain STAT ECG. First tap on ECG tab
    - Students will be asked “Have you attached the ECG leads?”
      - They should place leads on simulator, then indicate “yes”
      - ECG image will be displayed
- Technician Prompts
  - Patient is concerned and anxious about his breathing and the new tests ordered, and wants more information.
  - Initial patient responses can include:
    - “What is wrong? Why am I so short of breath?”
    - “Why do I have to have an ECG? Is my heart not working right?”
    - “Are you going to shock me like they do on TV?”

        - "Am I going to die?"
        - "What is an ABG? Will it hurt?"
        - "Where is my wife?"
    - When students call the provider, they should use SBAR format to report their concerns. If not, ask appropriate questions, then provide the following orders that will then appear on the iPad in State 2:
        - Respiratory Therapy consult STAT
        - ABG STAT
        - 12 lead ECG STAT
        - Portable CXR STAT (PA and Lateral)
        - Call me with results
- Facilitator Questions
    - What are the roles and responsibilities of a respiratory therapist?
    - How are ABGs used to evaluate patient status?
    - Relate the ABG results to Hector's current status.
    - How is the CXR used to evaluate Hector's status?
    - Why is the 12 lead ECG ordered?
- Tabbed iPad Prompts & Content Changes
    - Students will progress to State 3 after completing Expected Behaviors and scanning **QR Code: Facilitator indicating** they have called the provider to notify him/her of the STAT results.

ORDERS

Provider Orders

Date	Time	Order
Today	On admission	Admit to Virtual Medical Center Cardiac Center unit
		IV Fluid Bolus 0.9% NS with 20 mEq K+ at 500 ml/hour for one hour, followed by maintenance rate of 150 ml/hr

		Continuous cardiac monitoring
		12 lead STAT ECG PRN for new onset chest pain
		Administer O2 via nasal cannula to maintain pulse oximetry 95% or greater
		Notify HCP if cannot maintain O2 sat > 90% on oxygen via NC
		Cardiac diet: 2g sodium, low cholesterol, low fat
		Weight on admission and daily weights
		Physical therapy consult
		Aspirin enteric coated 81mg one tab PO every day
		Acetaminophen 500 mg PO 2 tabs every 4 hours for pain or fever PRN
		Furosemide 40mg PO every 12 hours
		Metoprolol 12.5 mg PO daily
		Lisinopril 10mg PO daily
		Atorvastatin 40 mg PO daily
		CBC with differential, Chem 7, Magnesium, BNP, Liver Enzymes, TSH, Troponin
		Echocardiogram
		TED hose on while awake
		Consult with social worker for advanced directives
		Consult for cardiac rehabilitation on discharge
		On discharge, provide and document heart failure instructions: diet and fluid restrictions, activity, medications, daily weight recording, worsening symptoms, and follow-up appointment after discharge
		---- Dr. M. Cordoba, M.D
Today	Now	Respiratory Therapy consult STAT
		ABG STAT
		12 lead ECG STAT
		Portable CXR STAT (PA and lateral)
		Call provider with STAT results
		---- Dr. M. Cordoba, M.D

LABS

Facilitator Note: Students will first be asked if they have called for ABG

Arterial Blood Gas (ABG)					
	Now			Units	Reference Range
pH	7.35				7.35-7.45
$PaCO_2$	45			mmHg	35-45
PaO_2	80			mmHg	80-100
HCO_3	25			mmol/L	22-26
Base Excess	1			mmol/L	0+/-3
SaO_2	88% on RA			%	

CBC with Differential					
	On admission			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	50				31-57
Lymph	40				35-61
Mono	5				4-7
Eos	4				2-4
Baso	1				0-1

Chem 7					
	On admission			Units	Reference Range
Glucose	100			mg/dL	Fasting 70-150
BUN	40			mg/dL	10-25
Creatinine	1.6			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					
	On admission			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					
	On admission			Units	Reference Range
ALT (SGPT)	45			u/L	4-36
AST (SGOT)	65			u/L	0-35

TSH					
	On admission			Units	Reference Range
TSH	8			uU/L	2-10

Troponin					
	On admission			Units	Reference Range
Troponin	0.1			*ng*/ml	<0.2

IMAGING

Facilitator Note: Students will first be asked if they have called for a Chest X-ray.

Imaging Report

DESCRIPTION: Portable x-ray to evaluate acute shortness of breath in 62 year old male with history of chronic heart failure.

EXAM: Portable AP chest

REASON FOR EXAM: Shortness of breath/asthma

COMPARISON EXAM: None

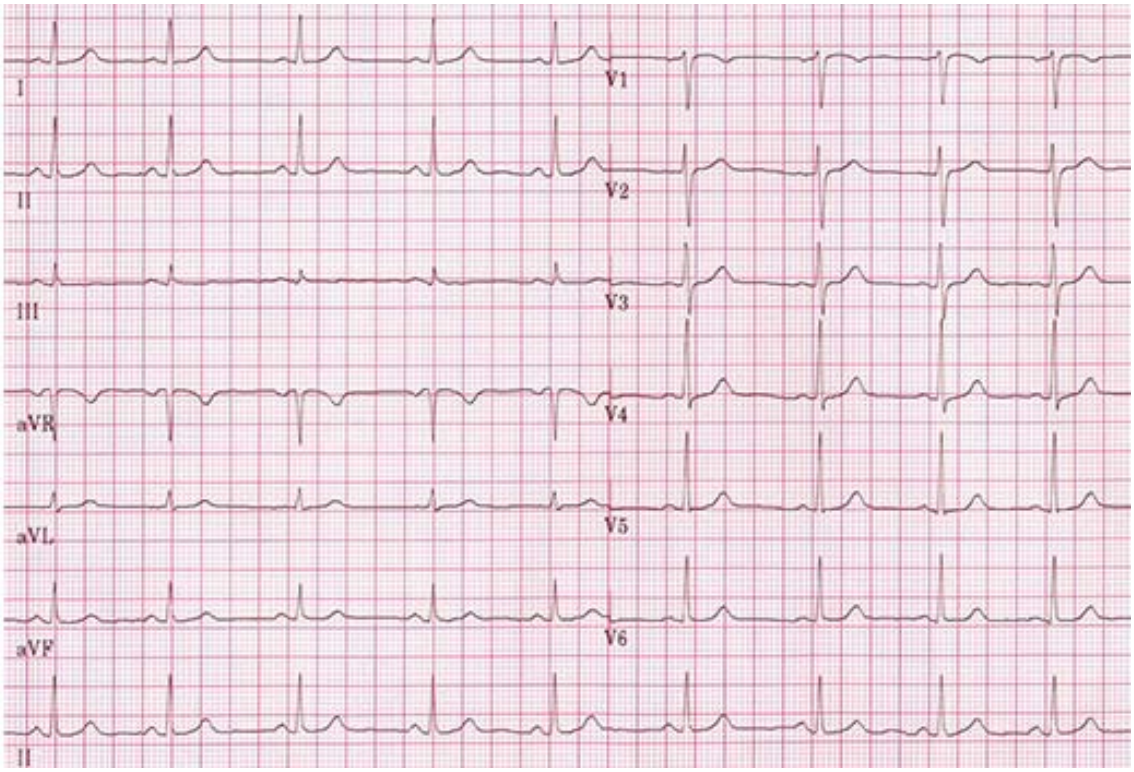
TECHNIQUE: 1.5 mAS @ 125 kvp

DISCUSSION: The hilar and mediastinal vessels are of normal appearance. Left ventricular hypertrophy. Interstitial and alveolar edema present bilaterally in bases of lungs consistent with venous pulmonary hypertension.

IMPRESSION: Moderate congestive heart failure with left ventricular hypertrophy, pulmonary edema, and venous pulmonary hypertension.

ECG

Facilitator Note: Students will first be asked if they have attached the ECG leads.



STATE 3

RESPIRATORY THERAPY CONSULT AND NEW ORDERS RECEIVED

- Patient Overview
  - State 3 begins with a video report of the Respiratory Therapist summarizing her findings and recommendations. This is followed by a video of the patient refusing to wear his BIPAP, and a third video of the family member stating the mask is "making things worse." Simulating that RT called the doctor and requested furosemide, a message is displayed that new orders are received, and Furosemide IVP STAT appears on the Orders and the MAR.
- Expected Student Behaviors
  - Therapeutically explain the purpose of the Furosemide IVP to the patient.
  - Appropriately administer Furosemide IV STAT by first asking patient his name and DOB and then scanning appropriate **QR code: Patient ID** and **QR Code: Furosemide IV**.
    - Note: The image of the Furosemide intentionally displays a supplied vial of Furosemide 20mg/2 ml for discussion
  - Respond therapeutically to the patient and family concerns about the BiPAP
  - Explain the purpose of the BiPAP and encourage the patient to use it.
- Technician Prompts
  - Patient is becoming more anxious and short of breath. He is refusing to wear his BiPAP mask. He is irritable when the students try to administer the IVP Furosemide due to hypoxia and anxiety.
  - Initial patient responses can include:
    - "This BiPAP mask... is making it worse!"
    - "I don't want to wear that mask!"
    - "Can't anyone do anything to help me breathe?"
    - "What is that medication for?"
    - "Is that the stuff that make you have to pee a lot?"

        - "I don't want that medicine if it's going to make me have to get up and go to the bathroom all the time."

- Facilitator Questions
    - What is the purpose of the BiPAP?
    - Why do patients often have difficulty wearing the BiPAP mask?
    - How will IV Furosemide improve Hector's current status?
    - How fast should IVP Furosemide be administered?
    - When and how will you evaluate for the effectiveness of the IV furosemide?
- Tabbed iPad Prompts & Content Changes
    - Students may progress to State 4 after completing Expected Behaviors and scanning **QR Code: Patient ID and QR Code: Furosemide IV**

ORDERS

Provider Orders

Date	Time	Order
Today	On admission	Admit to Virtual Medical Center Cardiac Center unit
		IV Fluid Bolus 0.9% NS with 20 mEq K+ at 500 ml/hour for one hour, followed by maintenance rate of 150 ml/hr
		Continuous cardiac monitoring
		12 lead STAT ECG PRN for new onset chest pain
		Administer O2 via nasal cannula to maintain pulse oximetry 95% or greater
		Notify HCP if cannot maintain O2 sat > 90% on oxygen via NC
		Cardiac diet: 2g sodium, low cholesterol, low fat
		Weight on admission and daily weights
		Physical therapy consult
		Aspirin enteric coated 81mg one tab PO every day
		Acetaminophen 500 mg PO 2 tabs every 4 hours for pain or fever PRN
		Furosemide 40mg PO every 12 hours

		Metoprolol 12.5 mg PO daily
		Lisinopril 10mg PO daily
		Atorvastatin 40 mg PO daily
		CBC with differential, Chem 7, Magnesium, BNP, Liver Enzymes, TSH, Troponin
		Echocardiogram
		TED hose on while awake
		Consult with social worker for advanced directives
		Consult for cardiac rehabilitation on discharge
		On discharge, provide and document heart failure instructions: diet and fluid restrictions, activity, medications, daily weight recording, worsening symptoms, and follow-up appointment after discharge
		---- Dr. M. Cordoba, M.D
Today	1 hour ago	Respiratory Therapy consult STAT
		ABG STAT
		12 lead ECG STAT
		Portable CXR STAT (PA and lateral)
		Call provider with STAT results
		---- Dr. M. Cordoba, M.D
Today	Now	Furosemide 80 mg IVP STAT
		Discontinue 0.9% NS with 20 mEq K+
		---- Dr. M. Cordoba, M.D

MAR

Medication Administration Record

Scheduled		
Furosemide 80 mg IVP STAT	**DUE NOW**	
Aspirin 81 mg EC PO daily	**Due Today**	**Last Given**
	0800	
	Due Today	**Last Given**

Furosemide 40 mg PO twice daily	0800	
Metoprolol 12.5 mg PO daily	**Due Today**	**Last Given**
	0800	
Lisinopril 10 mg PO daily	**Due Today**	**Last Given**
	0800	
Atorvastatin 40 mg PO daily	**Due Today**	**Last Given**
	0800	
Continuous Infusion		
		Started
PRN		
Acetaminophen 500 mg PO PRN every 4 hours for pain or fever		**Last Given**
Discontinued		
0.9% NS with 20 mEq K+ at 500 ml/hour for one hour, followed by maintenance rate of 150 ml/hour	Discontinued	Last Given
		1 hour ago

PROGRESS NOTES

Progress Notes

Date/Time	Note
Today/ 10 minutes ago Respiratory Therapy	Received STAT order to evaluate for acute shortness of breath. Patient has a history of chronic heart failure and was admitted for dehydration. He received an IV fluid bolus and has been receiving IV fluid therapy at 150ml/hour for over twelve hours. On initial assessment: respiratory rate 35, Heart rate 115, O2 sats 85% with crackles in bases up to medial lobes posteriorly, anteriorly and medially. Applied BiPAP after educating the patient on benefits or therapy, but patient adamantly refused to wear mask despite several attempts. Reassessed O2 sat after applying nasal canula at 5L/min and was 88%. Notified nurse to continue to encourage BiPAP therapy and recommend STAT IV Lasix order from provider. ---- Evelyn O'Connor, RRT

STATE 4

EVALUATION OF PATIENT RESPONSE TO INTERVENTIONS

- Patient Overview
  - An image is displayed with a message that 30 minutes have elapsed. The student should evaluate patient's response to the interventions provided. The student may also provide education about management of chronic heart failure.
- Expected Student Behaviors
  - Evaluate urine output. If no urinal is present in sim lab, may scan **QR Code: Urinal** for picture of a full urinal.
  - Evaluate for improvement of lung sounds by scanning **QR Code: Chest** in various anatomical locations.
    - Facilitator note: Lung sounds have improved with fine crackles only in the posterior lower bases now.
  - May provide patient education about chronic heart failure using the Patient Education handout provided.
- Technician Prompts
  - Simulator vital signs should now be: BP 130/86, HR 90, RR 20, O2 sat 94%
  - Simulator lung sounds should be set to clear
  - Place urinal full of clear urine on meal tray (or students use **QR Code: Urinal**)
  - Patient is feeling much less short of breath and less anxious
  - Initial patient responses can include:
    - "I feel so much better! That medicine really helped!"
    - "Will I be peeing like this all night?"
  - If students provide patient education:
    - "Why does the doctor care so much about my weight?"
    - "Do tacos have a lot of sodium?"

        - "What foods can I eat that don't have a lot of sodium?"

- Facilitator Questions
    - Was the IVP Furosemide effective? How did you evaluate?
    - Why is it important to teach patients how to self-manage chronic heart failure?
- Tabbed iPad Prompts & Content Changes
    - Students may exit after completing Expected Behaviors and scanning any **QR Code: Chest**
        - Facilitator note: Lung sounds have improved since initial assessment with fine crackles only in the posterior lower bases now.

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: Prioritize nursing care for a patient with heart failure and Incorporate evidence-based practice while caring for a patient with heart failure:
    a. What were your clinical concerns when you initially assessed Mr. Fernandez?
    b. How did you address your concerns?
    c. What interventions were needed?
    d. Were the interventions effective?
3. Review understanding of learning objectives: Relate chest X ray and echocardiogram results to patient condition
    a. Relate the results of the CXR and echocardiogram to Mr. Fernandez's status
4. Review understanding of learning objective: Administer cardiac related medications safely
    a. Explain how you administered Furosemide IVP and how you evaluated its effectiveness.
5. Review understanding of learning objective: Communicate therapeutically with a patient experiencing an acute health care event
    a. How did you communicate therapeutically with Mr. Fernandez and his family member when he was feeling short of breath and anxious?
    b. Was it effective?
    c. If y0u could "do over," how would you communicate differently with Mr. Fernandez or his family member?
6. Review understanding of learning objective: Report complete, accurate, and pertinent information to the health care team
    a. What information was important to communicate to the provider upon your initial assessment?
    b. If you could "do over," would you communicate any differently to the provider?

   c. What information was important to communicate to the respiratory therapist?

   d. If you could "do over," would you communicate any differently to the respiratory therapist?

7. Tie the scenario to learning objective: Develop a nursing plan of care for a patient with chronic heart failure and dehydration who developed fluid overload due to IV fluid therapy.

   a. Identify 3 priority nursing problems you identified.

   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?

8. Summarize/Take away Points: "In this scenario you care for a patient with chronic heart failure who was experiencing an acute exacerbation. 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

APPENDIX A: H&P

History and Physical

DATE: On admission

ADMITTED TO: Virtual Medical Center

CHIEF COMPLAINT: Dehydration and weakness

HISTORY OF PRESENT ILLNESS: Mr. Fernandez is a 62 y/o male is a direct admit from the nursing home to the cardiac unit for IV fluid treatment of dehydration. He has a history of chronic heart failure classified as NYHA Class II and has been receiving Lasix 40 mg twice daily. Digoxin was discontinued yesterday due to elevated serum levels. Mr. Fernandez describes no other associated symptoms such as chest pain, shortness of breath, dizziness, or palpitations. He was recently admitted to the skilled nursing facility due to frequent falls at home.

PAST MEDICAL/SURGICAL HISTORY: Diagnosed with a long-standing history of heart failure, hyperlipidemia, and hypertension.

ER/HOSPITALIZATIONS IN THE LAST 12 MONTHS: None

MEDICATIONS: Current medications at home include: Aspirin 81 mg daily, Digoxin 0.25 mg daily, Lisinopril 10 mg daily, Metoprolol 12.5 mg daily, Atorvastatin 40 mg daily, Furosemide 40 mg twice daily and Tylenol as needed for pain.

ALLERGIES: Penicillin

SOCIAL HISTORY: Mr. Fernandez is a pleasant 62-year-old gentleman who lived with his 55-year-old wife in his home for the past 35 years, until she passed away last year. He is a retired veteran who served in the Army for 30 years. He has two sons who live out of state, and a grandson in the area. His religious preference is Catholic and he occasionally attends services at St. Andrew's.

Mr. Fernandez denies any history of tobacco use. Mr. Fernandez also states that he occasionally has a glass of beer with dinner and otherwise drinks alcohol socially on rare occasion. He denies illegal drug use and occasionally takes OTC acetaminophen for arthritic pain.

REVIEW OF SYSTEMS:

GENERAL: Has had increased weakness and fatigue over past several months to the point where he cannot complete his normal daily activities and has experienced several falls.

HEENT: Wears reading glasses and otherwise unremarkable. No complaints of headache change in vision, nose or ear problems, or sore throat.

Respiratory: Denies increased shortness of breath. Reports occasional cough of clear sputum.

Cardiovascular: Denies chest pain. Has chronic edema in both feet and legs for which he occasionally wears TED hose.

Peripheral Vascular: Denies claudication, leg cramps, parasthesias.

Gastrointestinal: No complaints of nausea, vomiting or diarrhea. No complaints of dysphagia, nausea, vomiting, or change in stool pattern, consistency, or color.

Genitourinal: No complaints of dysuria, hematuria. Does have difficulty starting stream with some dribbling. Generally has nocturia x 3.

Musculoskeletal: He complains of daily joint pain, which worsens before it rains. This pain is usually relieved with Tylenol. He complains of no other muscle aches or pains. He complains of increasing fatigue and weakness that has prevented him from gardening over the past few months, and has fallen five times at home without major injury. He states when he falls "my legs just go out from under me."

Neurological: Denies numbness and tingling in extremities.

PHYSICAL EXAM:

Vital signs: Blood Pressure: 158/100, Pulse: 58, Respirations: 18, Temperature: 37.5 degrees Celsius, O2 sat 95%

height= 175 cm, weight= 86.4 kg
Pain Scale 2/10

General Appearance: 62-year-old male who appears stated age although dehydrated and slightly disheveled. Maintains eye contact and interacts appropriately. Is alert and oriented x 3 and cooperative but fatigued.

HEENT: Pupils equally round, 4mm, reactive to light and accommodation, sclera and conjunctiva normal. Fundoscopic examination reveals normal vessels without hemorrhage.

Tympanic membranes and external auditory canals within normal limits.

Oral pharynx without erythema or exudates. Tongue and gums are within normal limits.

Neck is easily movable without resistance. No abnormal adenopathy in the cervical or supraclavicular areas. Trachea is midline and thyroid gland is without masses. No carotid bruit auscultated.

Integument: Skin is warm and dry with no cyanosis present.

Respiratory/Chest: Lungs clear bilaterally. No accessory muscle use. Minimal effort. No cyanosis or clubbing.

Cardiovascular: Normal S1S2 without extra sounds. PMI is in the 6th inter-costal space at the lateral line.

Vascular/extremities: Posterior tibial pulses – L 1/4 / R 1/4 Capillary refill less than three seconds. Extremities warm and pink. Lower extremity pedal edema 1+ bilaterally.

Gastrointestinal/abdomen: The abdomen is symmetrical without distention; bowel sounds are normal in quality and intensity in all areas. No masses or splenomegaly are noted.

Genitourinary: No CVA tenderness.

Neurological: Cranial nerves II – XII are within normal limits. Motor ability, sensation and reflexes of the upper and lower extremities are within normal limits. Gait is wide based but otherwise steady.

ASSESSMENT/PLAN:

1. Admit to Virtual Medical Center
2. IV Fluid bolus 0.9% NS with 20 mEq K+ at 500 ml/hour, followed by maintenance rate of 150 ml/hr
3. Continuous Cardiac Monitoring
4. 12 lead STAT EKG PRN for new onset chest pain
5. Administer O2 via nasal cannula PRN to maintain pulse oximetry at 95% or greater (notify health care provider if cannot maintain O2 sat >90%)
6. Cardiac diet: 2 g sodium diet, low fat, low cholesterol
7. Weight on admission and daily weights
8. Aspirin enteric coated 81 mg PO daily
9. Furosemide 40 mg PO every 12 hours
10. Metoprolol 12.5 mg PO daily
11. Lisinopril 10 mg PO daily
12. Atorvastatin 40 mg PO daily
13. Acetaminophen 500 mg PO PRN every 4 hours for pain or fever
14. CBC with differential, Chem 7, Magnesium, BNP, Liver Enzymes, TSH, Troponin

15. Echocardiogram
16. Physical therapy consult
17. Consult with social worker regarding Advanced Directives
18. Consult for cardiac rehabilitation on discharge
19. On discharge, provide and document heart failure instructions: diet and fluid restrictions, activity, medications, daily weight recording, worsening symptoms, and follow-up appointment after discharge

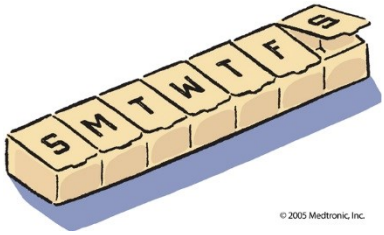
Electronically signed by: Dr. M. Cordoba, M.D.

APPENDIX B: PATIENT EDUCATION HANDOUT ON HEART FAILURE

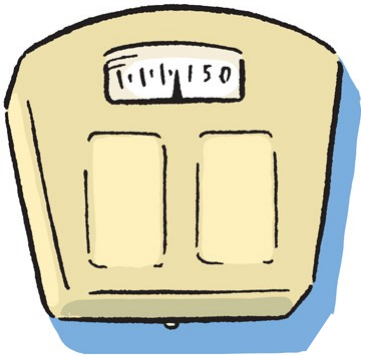
What Can I Do to Manage Heart Failure?

Although heart failure cannot be cured, it can be managed well. Your treatment plan may include medicines, surgery, implantable medical devices, or a combination of these approaches. There are also a lot of things you can do to help improve your condition. Together with proper medical care and careful monitoring, good self-care can help you feel better, stay out of the hospital, and live a longer life.

To manage your heart failure, it is best if you do the following:



Take your medicines regularly as prescribed by your doctor. When the medicines that your doctor has prescribed are taken regularly and at the correct doses, they can make you feel better, reduce hospitalizations, and help you live longer. Experts in heart failure call many of these medicines "lifesaving." Since your medication is very important, when traveling, keep your medication in your carry-on luggage and bring it with you on the plane. It is helpful to keep your medicine organized, and remember to refill your prescriptions before you travel so that they do not run out.



Weigh yourself every day and write it down.

Daily changes in weight are usually the result of water weight. By weighing yourself every day at the same time, you can help monitor whether your body is retaining fluid due to heart failure. Even though you may feel the same, a gain of just 3 to 4 pounds over a few days is a sign of worsening congestion that must be treated. If treated, your heart and lungs can function more easily and you may feel more comfortable. If left untreated, it may become more serious and require hospitalization.

Follow a low-sodium (low-salt) diet.

Heart failure can cause your body to retain sodium and result in fluid buildup. The extra fluid makes your heart work harder and your symptoms get worse.

A low-sodium diet generally means that you eat no more than about 2,000 milligrams (mg) of sodium per day. That amount is less than 1 teaspoon of salt from all sources, including the salt that is already in your food.

To reduce the sodium in your diet, stop adding additional salt to your food. Avoid processed foods –especially canned, boxed, or bagged foods – and eat more fresh vegetables and fruit. Be sure to review the nutritional information labels on all packaged foods for sodium content, and decrease the total amount of salt you eat per day. Pay close attention when eating at restaurants. Many restaurants will tell you nutritional information of foods if you ask. They will hold salt when cooking if you ask and will serve salad dressing and sauces/gravies on the side. Also, pay attention to certain foods that contain a large amount of water, such as head lettuce or watermelon. Although following a low- sodium diet might be a challenge, by following the diet recommended by your doctor or nurse you will gain better control of your condition.

Get regular physical activity.

Heart failure can make you feel tired. One of the ways to feel better is to keep physically active through a regular exercise program. In general, start slowly and increase your exercise gradually. Talk to your doctor about an exercise program that is best for you. Exercise can be a highly valuable plan to improve your condition.

Quit smoking.

Quitting smoking is one of the best things you can do for your heart and overall health. Smoking damages your blood vessels, increases your blood pressure, and causes lung disease in addition to other problems. Quitting smoking is strongly recommended for all people with heart disease, including heart failure. Talk to your doctor or nurse about new methods for helping people quit smoking.

Stay connected socially.

Your family and friends can help. Don't keep your condition a secret. Let your family and friends support you and help you stay with your treatment plan. Having an active social life can also help keep your mind off your problems and give you a more positive outlook on life. Participating in activities that you enjoy reminds you of why you want to take good care of yourself and stay healthy. Plan some fun activities that will reduce stress and give you energy.

Monitor your symptoms daily and learn when to call your doctor. ***You*** know your heart failure symptoms best. Write down when you notice your symptoms are getting better or worse, or when you develop new symptoms. This information can help alert you as to when you should call your doctor and can also help your doctor make changes to your treatment.

Feel free to ask your doctor and nurse any questions you might have about your treatment plan.

Adapted by the SCA Prevention Medical Advisory Team from the IMPROVE HF registry toolkit.

Sponsored by Medtronic, Inc.

May 2007

CREDITS

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