SECTION I: SCENARIO OVERVIEW

Scenario Title:	Adult Medical-Surgical: Left Lower Leg Cellulitis
Original Scenario Developer(s):	Colleen Nevins, DNP, RN, CNE
Date - original scenario	06/13
Validation:	07/18 M.Miller, MA, RN, CHSE
Revision Dates:	06/18
Pilot testing:	09/13
QSEN revision:	Included in initial scenario

Estimated Scenario Time: 15 - 20 minutes Debriefing time: 30 - 40 minutes

Target group: Pre-licensure medical-surgical nursing students; new graduates; practicing nurses
Core case: Advancing bacterial skin infection

QSEN Competencies:

- ❑ Patient Centered Care
- ❑ Evidence Based Practice
- ❑ Teamwork and Collaboration

Brief Summary of Case: *52-year-old male construction worker admitted via ED with diagnosis of left lower leg cellulitis after stepping on a nail 2 days prior. The patient has a history of hypertension. Vaccinations are current except for tetanus vaccine, which was greater than 10 years ago. Learners are expected to perform a general head-to-toe assessment that includes a focused assessment of the left foot and lower leg; recognize the signs, symptoms and treatment of advancing cellulitis; and institute orders while considering additional pertinent nursing interventions.*

This scenario is appropriate for medical-surgical nursing students, new graduates, or practicing nurses. Complexity can be enhanced with patient as hemodynamically unstable requiring sepsis protocol and ICU care; lymphedema, MRSA; or necrotizing fasciitis; and/or additional co-morbidity of diabetes.

EVIDENCE BASE / REFERENCES

Centers for Disease Control and Prevention. (2016). *Infection control.* Retrieved from https://www.cdc.gov/infectioncontrol/

Hinkle, J. L., & Cheever, K. H. (2018). *Brunner & Suddarth's Textbook of Medical-Surgical Nursing* (14th ed.). Philadelphia, PA: Lippincott Williams & Wilkins

Phillips, L. L. (2000). Putting a damper on cellulitis. *Nursing, 35(12)*, 52-53.

Todhunter, J. (2018). Diagnosis and management of lower limb cellulitis. *Journal Of Community Nursing, 32*(1), 40-47

2018 National Patient Safety Goals (Hospital) retrieved from: https://www.jointcommission.org/hap_2017_npsgs/

SECTION II: CURRICULUM INTEGRATION

A. SCENARIO LEARNING OBJECTIVES
Learning Outcomes
1. Provide evidence-based nursing care that promotes safety and minimizes risk of error.
2. Apply clinical decision-making skills in interpreting and analyzing data in an acute situation.
3. Prioritize interventions to provide care that is safe, effective, and patient-centered.
4. Communicate effectively with members of the inter-professional team using SBAR.
Specific Learning Objectives
1. Identify findings from physical assessment that demonstrate risk of complications in a patient w/cellulitis.
2. Demonstrate accurate assessment with a focus on infectious process of the integumentary system.
3. Identify and interpret significant assessment findings requiring immediate reporting and/or intervention.
4. Accurately prioritize immediate interventions required for a client with an unexpected change in status.
5. Evaluate effectiveness of interventions by reassessing critical parameters.
6. Effectively communicate change in status to physician/charge nurse utilizing SBAR tool.
7. Effectively communicate with client using therapeutic techniques to keep informed and relieve anxiety.
8. Apply safety and infection control measure appropriate to situation.
Critical Learner Actions
1. Wash hands, introduce self, identify client (with 2 identifiers) upon entering room.
2. Perform complete assessment, including vital signs, and documentation.
3. Recognize advancing infection systemic with symptoms of fever, chills, increase pain and redness.
4. Administer Acetaminophen and report findings to charge nurse/ MD using SBAR.
5. Provide SBAR report at end of scenario.

B. PRE-SCENARIO LEARNER ACTIVITIES	
Prerequisite Competencies Required prior to participating in the scenario	
Knowledge	Skills/ Attitudes
❑ Nursing process and professional role	❑ General survey, vital signs, and physical assessment
❑ Pathophysiology of cellulitis	❑ Significance of abnormal assessment findings
❑ Hemodynamic stasis and effects of infection	❑ Nursing interventions for infectious processes
❑ Medication management	❑ Medication administration
❑ National Patient Safety Goals	❑ Therapeutic and professional communication
❑ Structured Communication Tools (e.g., SBAR)	❑ Value active team participation in plan of care

SECTION III: SCENARIO SCRIPT

A. Case summary
This case presents a 52-year-old male construction worker, who has just been admitted with cellulitis and history of hypertension to the medical-surgical unit from the ED. The patient reports stepping on a nail that pierced his left boot 2 days prior while working. He awoke this morning with left foot and ankle tenderness, stating he was unable to walk without pain or put on a shoe due to swelling. The pain is rated 4 out of ten and described as throbbing. There is a dry puncture wound on the bottom of the left foot with redness streaking from the around the puncture area to the lower calf of the leg. The patient was diagnosed with Left Lower Leg Cellulitis in the ED. Prior to arrival to the medical-surgical unit, blood cultures, urine and wound cultures were obtained. Patient is alert and oriented, cooperative, and states he did not take his blood pressure medication today.

B. Key contextual details
The patient has been recently admitted to the medical-surgical unit. The learners receive report from the charge nurse who reports that the patient was admitted through the ED this morning with a fever and cellulitis from a puncture wound at the bottom of the left foot. The patient presents with pain and elevated blood pressure.

C. Scenario Cast		
Patient/ Client	❑ High fidelity simulator	
	❑ Mid-level simulator	
	❑ Task trainer	
	❑ Hybrid (Blended simulator)	
	❑ Standardized patient	
Role	Brief Descriptor (Optional)	Standardized Participant (SP) or Learner (L)
Team Leader	Oversees and guides care; communicates with healthcare team	Learner
Primary Nurse	Assessment and evaluation of patient	Learner
Secondary Nurse	Interventions including medication review and administration	Learner
Charge Nurse/Physician	Available for support as needed	Standardized Participant

D. Patient/Client Profile				
Last name:	Burns		First name:	Frank
Gender: M	Age: 52	Ht: 72”	Wt: 100 kg	Code Status: Full
Spiritual Practice: None		Ethnicity: White		Primary Language:English

1. History of present illness

52-year-old male construction worker, who has just been admitted with cellulitis and history of hypertension to the medical-surgical unit from the ED. The patient reports stepping on a nail that pierced his left boot 2 days prior while at work. He awoke this morning with left foot and ankle tenderness, stating he was unable to walk without pain or put on a shoe due to swelling. The pain is rated 4 out of ten and described as throbbing. There is a dry puncture wound on the bottom of the left foot with redness streaking from the around the puncture area to the lower calf of the leg. The patient was diagnosed with Left Lower Leg Cellulitis in the ED. Prior to admission to the medical-surgical unit, blood cultures, urine and wound cultures were obtained in the ED; he received the first dose of Vancomycin and a tetanus vaccine in the ED. Patient is alert and oriented, cooperative, and states he did not take his blood pressure medication today.

Primary Medical Diagnosis	Left lower limb cellulitis

2. Review of Systems	
CNS	A & O x4
Cardiovascular	Regular rate and rhythm, no murmur; hx of hypertension; BP 140/90
Pulmonary	Lungs clear to auscultation; 35 pack-year history of smoking cigarettes;
Renal/Hepatic	Renal/hepatic labs normal
Gastrointestinal	Abdomen soft, round, distended
Endocrine	No noted history
Heme/Coag	Heme/Coag labs normal
Musculoskeletal	Moves all extremities with good ROM except for limited left ankle and foot ROM
Integumentary	Intact with no lesions except for cellulitis from left plantar area to ankle
Developmental Hx	Normal for age
Psychiatric Hx	No noted history
Social Hx	Socially drinks; no illicit drugs; married with 3 adult children
Alternative/ Complementary Medicine Hx	none

Med allergies:	Penicillin	Reaction:	Hives
Food/ allergies:	Broccoli	Reaction:	Nausea

3. Current medications

Drug	Dose	Route	Frequency
Vancomycin	1 gram	IV	Every 12 hours
Hydrochlorothiazide	25 mg	PO	Daily
Acetaminophen	350 mg	PO	Every 6 hours prn
Morphine Sulfate	2 – 3 mg	IV	Every 3 hours prn
Normal Saline Flush	3 ml	IV	Every 12 hours

4. Laboratory, Diagnostic Study Results					
Na: 136	K: 4.8	Cl: 95	HCO3: 23	BUN: 14	Cr: 1.0
Ca: 9.0	Mg: 2.0	Phos:	Glucose: 126	HgA1C:	
Hgb: 12	Hct: 36	Plt: 150,000	WBC: 16,000	ABO Blood Type: O+	
PT	PTT	INR	Troponin:	BNP:	
Ammonia:	Amylase:	Lipase:	Albumin:	Lactate:	
ABG-pH:	paO2:	paCO2:	HCO3/BE:	SaO2:	
VDRL:	GBS:	Herpes:	HIV:		
CXR: clear; no infiltrates		ECG: Normal Sinus Rhythm at 80 bpm; no ectopy			
CT:		MRI:			
Other: Blood, urine and wound cultures obtained and pending					

E. Baseline Simulator/Standardized Patient State

1. Initial physical appearance					
Gender: M		Attire: Patient Gown			
Alterations in appearance (moulage): Ulceration on left plantar aspect of foot, no drainage, redness streaking from plantar area to ankle; 2+ non-pitting edema from toes to lower leg					
x	ID band present, accurate information		ID band present, inaccurate information		ID band absent or not applicable
x	Allergy band present, accurate information		Allergy band present, inaccurate information		Allergy band absent or not applicable

2. Initial Vital Signs Monitor display in simulation action room:					
	No monitor display	x	Monitor on, no data displayed		Monitor on, standard display

BP: 140/90	HR: 100	RR: 22	T: 38.5 c	SpO2: 98%
CVP:	PAS:	PAD:	PCWP:	CO:
AIRWAY:	ETC02:	FHR:		
Lungs: Sounds/mechanics	Left: Clear		Right: Clear	
Heart:	Sounds:	S1, S2 – no ectopy or murmurs		
	ECG rhythm:	NSR		
	Other:			
Bowel sounds:	Present		Other:	

ALL DATA IN THIS SCENARIO IS FICTITIOUS

3. Initial Intravenous line set up							
X	**Saline lock #1**	Site:	RA				IV patent (Y/N)
	IV #1	Site:		Fluid type:	Initial rate: 100 ml/hr		IV patent (**Y**/N)
	Main						
	Piggyback						
	IV #2	Site:		Fluid type:	Initial rate:		IV patent (Y/N)
	Main						
	Piggyback						

4. Initial Non-invasive monitors set up					
x	NIBP		ECG First lead:		ECG Second lead:
x	Pulse oximeter		Temp monitor/type		Other:

5. Initial Hemodynamic monitors set up					
	A-line Site:		Catheter/tubing Patency (Y/N)	CVP Site:	PAC Site:

6. Other monitors/devices					
	Foley catheter	Amount:		Appearance of urine:	
	Epidural catheter		Infusion pump:	Pump settings:	
	Fetal Heart rate monitor/tocometer			Internal	External

Environment, Equipment, Essential props

1. Scenario setting: (example: patient room, home, ED, lobby)

Medical/surgical unit room

2. Equipment, supplies, monitors (In simulation action room or available in adjacent core storage rooms)							
x	Bedpan/ Urinal		Foley catheter kit		Straight cath. kit		Incentive spirometer
x	IV Infusion pump		Feeding pump		Pressure bag		Wall suction
	Nasogastric tube		ETT suction catheters		Oral suction catheters		Chest tube insertion kit
	Defibrillator		Code Cart		12-lead ECG		Chest tube equip
	PCA infusion pump		Epidural infusion pump		Central line Insertion Kit		Dressing Δ equipment
X	IV fluid Type: Vancomycin in 250 ml NS (empty)				Tubes/drains Type:		Blood product ABO Type: # of units:

3. Respiratory therapy equipment/devices							
x	Nasal cannula		Face tent	x	Simple Face Mask	x	Non-rebreather mask
x	BVM/Ambu bag		Nebulizer tx kit		Flowmeters (extra supply)		

4. Documentation and Order Forms							
x	Health Care Provider orders	x	Med Admin Record	x	H & P	x	Lab Results
	Progress Notes		Graphic record		Anesthesia/PACU record		ED Record
	Medication reconciliation		Transfer orders		Standing (protocol) orders		ICU flow sheet
	Nurses' Notes		Dx test reports		Code Record		Prenatal record
x	Actual medical record binder or electronic health record constructed per institutional guidelines				Other Describe:		

5. Medications (to be available in sim action room)								
#	**Medication**	**Dosage**	**Route**		**#**	**Medication**	**Dosage**	**Route**
1	Acetaminophen	650 mg	po					
2	Morphine Sulfate	5mg/ml soln	IV					
3	Saline Flush	0.9%	IV					

CASE FLOW / TRIGGERS/ SCENARIO DEVELOPMENT STATES			
Initiation of Scenario: This case presents immediately after patient admitted to medical-surgical unit at 1500. The Charge Nurse provides report: 52-year-old male construction worker, just admitted to medical-surgical from the ED with left lower leg cellulitis and history of hypertension. The patient reports stepping on a nail that pierced his left boot 2 days prior while at work. He awoke this morning with left foot and ankle tenderness, stating he was unable to walk without pain or put on a shoe due to swelling. The pain is rated 3 - 4 out of ten and described as throbbing. There is a puncture wound on the bottom of the left foot with cellulitis from the wound to the lower calf of the leg. Blood cultures, urine and wound cultures were obtained in the ED; he received the first dose of Vancomycin IV and a tetanus vaccine in the ED. Patient is alert and oriented, cooperative, and states he did not take his Hydrochlorothiazide before coming to the hospital today. The needs of the patient include an assessment and administration of Hydrochlorothiazide along with prioritization of physician orders. After answering any questions, the Charge Nurse departs.			
STATE / PATIENT STATUS	**DESIRED LEARNER ACTIONS & TRIGGERS TO MOVE TO NEXT STATE**		
1. Baseline Patient found lying in bed w/HOB elevated. He is awake, cooperative, oriented x 4. When asked, rates the pain in the bottom of his foot at 3 – 4/10; constantly throbbing since awakening this morning; aggravated by touch or pressure; and has not taken anything for pain. Dry puncture wound on left plantar area of foot with red streaking from around the puncture area up into the ankle; 2+ non-pitting edema from toes to lower leg	**Operator** BP 140/90 HR 100, regular rate and rhythm RR 22 T 38.5 C (101.3 F) O2 sats 98% on RA **Triggers:** complete actions within 5 minutes	**Learner Actions:** Wash hands / ID patient Introduce selves to patient Begin HTT assessment with focus on left lower extremity - Obtain vital signs - Assess pain (OLDCART) - Assess respiratory and cardiovascular systems - Assess areas of puncture and cellulitis including CMS to extremity - Assess IV site	**Debriefing Points:** CDC guidelines and NPSG's related to safety and prevention of infection Nursing responsibilities in accurate assessment and interpretation of findings.

STATE / PATIENT STATUS	DESIRED ACTIONS & TRIGGERS TO MOVE TO NEXT STATE		
2. Patient describes feeling warm and sweaty followed by chills Describes pain at 4/10 in lower foot, radiating to ankle	**Operator:** BP 142/94 HR 108 RR 22 T 38.7 C (101.7° F) O2 Sat 92% on 2 L/NC **Triggers:** If given Acetaminophen and Hydrochlorothiazide (HCTZ) - Go to state 3 (Rescue) Failure to give Acetaminophen - Go to state 4 (Failure to Rescue) If not given Hydrochlorothiazide, keep BP elevated.	**Learner Actions:** Complete assessment: Neuro, GI, Musculoskeletal. Document vital signs Notice change condition; aware of orders: - Prepares and gives Acetaminophen, using 3 checks and 6 rights, and providing rationale - Prepares and gives HCTZ, using 3 checks and 6 rights, providing rationale - Notifies MD of temp (> 38.3C) and medications given using SBAR; MD reminds caller to give Acetaminophen if not already given Provide calm explanation to patient for fever, chills and rationale for medications	**Debriefing Points:** Rationale for prioritization of interventions and risk of complications, identifying evidence-based practice sources Importance of professional closed-loop communication in use of SBAR Recognize findings, patient concern and the need for reassurance/information; use of therapeutic communication QSEN Competencies: Patient-Centered Care; Evidence-Based Practice; Teamwork and Collaboration

STATE / PATIENT STATUS	DESIRED ACTIONS & TRIGGERS TO MOVE TO NEXT STATE		
3. (Rescue) Reports felling less warmth and chills are noted to have decreased; describes pain at 2 – 3/10 with less throbbing	**Operator:** BP 132/90 HR 94 RR 20 T 38.1 C (100.6° F) O2 Sat 98% on RA **Triggers:** continued monitoring /provide rationale or education	**Learner Actions:** Reassess vital signs, including pain (OLDCART) Educate patient on s/s of cellulitis and potential complications; discuss treatment and management of hypertension	**Debriefing Points:** RN role in re-assessment and evaluation, specifically after interventions Potential complications in patients with cellulitis and hypertension
STATE / PATIENT STATUS	**DESIRED ACTIONS & TRIGGERS TO MOVE TO NEXT STATE**		
4. (Failure to Rescue) Patient c/o of feeling "out of it" with alternating between hot and cold Patient asks for pain medication – still rated at 4 – but feels worse; reminds nurses that he hasn't taken his HTCZ today	**Operator:** BP 142/94 HR 112 RR 26 T 38.9 C (102° F) O2 Sat 90% on 2L/NC **Triggers:** Orders not followed as prescribed	**Learner Actions:** Reassess vital signs, including pain (OLDCART) Discusses with patient the signs and symptom, correlating to cellulitis	**Debriefing Points** Rationale for prioritized care and rationale for physician orders; professional nursing roles and responsibilities Identify potential complications: loss of limb, sepsis
Scenario End Point: 15 – 20 minutes; Charge Nurse returns and asks for SBAR report			
Suggestions to <u>increase</u> complexity: Add hemodynamic instability requiring sepsis protocol and ICU care; lymphedema, MRSA; or necrotizing fasciitis; and/or co-morbidity of diabetes. Objectives should be determined by the level of learner.			

APPENDIX A: HEALTH CARE PROVIDER ORDERS

Patient Name: Burns, Frank **DOB: 08/13/XX** **Age: 52** **MR#: 831900**	**Diagnosis: Left Lower Leg Cellulitis** **Hypertension**

†† Allergies & Sensitivities: Penicillin; Broccoli
Code Status: FULL CODE

Date	Time	**HEALTH CARE PROVIDER ORDERS AND SIGNATURE**
		Admit to Medical/Surgical Unit
		Diet: Regular
		Activity: Bedrest with bathroom privileges
		Vital signs: every 4 hours; Call MD if BP > 160/90, O2 saturation < 90%, Temp ≥ 38.3 C (101 F)
		Strict I & O
		IV: Saline lock; flush with normal saline every shift
		Titrate O_2 to maintain SpO_2 at or above 93%
		Medications:
		Vancomycin 1 gm IVPB every 12 hours; start first dose after blood, urine and wound cultures
		Hydrochlorothiazide 25 mg po daily
		Acetaminophen (Tylenol) 350 mg every 6 hours prn for fever > 38.2 C (100.8 F) or mild pain (1 – 4/10)
		Morphine Sulfate IV push every 3 hrs prn: give 2 mg for moderate pain (5 – 6/10) and 3 mg for severe pain (7 – 10)
		Vancomycin peak and trough levels per protocol.
		CBC with differential and Sed Rate in am
Signature		*Richard Rushmore MD*

APPENDIX B: Digital images of manikin and/or scenario milieu	
	**Insert digital photo here**
Insert digital photo here	**Insert digital photo here**

APPENDIX C: DEBRIEFING GUIDE

General Debriefing Plan			
☐ Individual	☒ Group	☐ With Video	☐ Without Video
Debriefing Materials			
☐ Debriefing Guide	☐ Objectives	☐ Debriefing Points	☐ QSEN
QSEN Competencies to consider for debriefing scenarios			
☒ Patient Centered Care	☒ Teamwork/Collaboration	☒ Evidence-based Practice	
☐ Safety	☐ Quality Improvement	☐ Informatics	

Sample Questions for Debriefing

1. How did the experience of caring for this patient feel for you and the team?
2. Did you have the knowledge and skills to meet the learning objectives of the scenario?
3. What GAPS did you identify in your own knowledge base and/or preparation for the simulation experience?
4. Was there any RELEVANT information missing from the scenario that impacted your performance? How did you attempt to fill in the GAP?
5. The main objective of the simulation was to recognize worsening of cellulitis and intervene appropriately.
    a. Can you identify the assessment findings associated with cellulitis?
    b. Are there aspects of your nursing care where you addressed the objectives?
    c. Are there any aspects of your care that you would handle differently if you could?
6. What findings did the patient have that pre-disposed him to advanced cellulitis? Discuss considerations and potential issues with advanced, untreated and/or improperly treated cellulitis.
7. In what ways did you feel the need to check ACCURACY of the data you were given?
8. In what ways did prioritization affect your performance?
9. At what points in the scenario were your nursing actions specifically directed toward PREVENTION of a negative outcome?
10. What communication strategies did you use to validate ACCURACY of your information or decisions with your team members?
11. Discuss actual experiences with diverse patient populations and infectious diseases.
12. Identify roles and responsibilities when addressing acute needs of patients or during a crisis.
13. Discuss how current nursing practice continues to evolve in light of new evidence.
14. Discuss how each of the QSEN competencies for patient-centered care, evidence-based practice, and teamwork & collaboration impacted your care of the patient.
15. What three factors were most SIGNIFICANT that you will transfer to the clinical setting?

Notes for future sessions: