California Simulation Alliance (CSA)
Simulation Scenario Template

The California Simulation Alliance (CSA) is comprised of simulation users from all disciplines from throughout the state. Several regional collaboratives have formed totaling 7 as of March, 2011: The Rural North Area Simulation Collaborative (RNASC), the Capital Area Simulation Collaborative (CASC), the Bay Area Simulation Collaborative (BASC), the Central Valley Simulation Collaborative (CVSC, the Southern California Simulation Collaborative (SCSC), the Inland Empire Simulation Collaborative (IESC), and the San Diego Simulation Collaborative (SDSC). The CINHC, a non-profit organization focused on workforce development in healthcare provides leadership for the CSA.

The purpose of the California Simulation Alliance (CSA) is to be a cohesive voice for simulation in healthcare education in the state, to provide for inter-organizational research on simulation, to disseminate information to stakeholders, to create a common language for simulation, and to provide simulation educational courses. The goals of the alliance will include providing a home within the CINHC for best practice identification, information sharing, faculty development, equipment/vendor pricing agreements, scenario development, and sharing and partnership models. More information can be found on the CSA website at www.californiasimulationalliance.org

All scenarios have been validated by subject matter experts, pilot tested and approved by the CSA before they were published online. All scenarios are the property of the CINHC/CSA. The writers have agreed to release authorship and waive any and all of their individual intellectual property (I.P.) rights surrounding all scenarios. I.P release forms can be found on the websitewww. (Please send signed I.P. release forms to KT at kt@cinhc.org)

TABLE OF CONTENTS

SECTION I: SCENARIO OVERVIEW

Scenario Title:	IPE: Early Mobility in the Intensive Care Unit Status Post Lumbar L4/L5 Fracture with Thoraco-Lumbo-Sacral Orthotic (TLSO), Complicated by Sepsis
Original Scenario Developer(s):	Deborah Finn-Romero, DNP, RN, PHN Michael Sterken, PT, DPT, NCS
Date - original scenario	5/22/2019
Validation:	2/15/2020
Revision Dates:	3/27/2020
Pilot testing:	12/4/2019; 12/6/2019
QSEN revision: IPE:	NA included in original scenario

Estimated Scenario Time: 20 minutes Debriefing time: 20 minutes

Target group: Physical Therapy Students & Nursing Students

Core case: 76 year old male s/p fall with non-operative L4/L5 compression fractures, fitted with TLSO on day 1, then transferred to ICU on day 3 with sepsis. PT/RN enter room to assess and mobilize the patient on day 4.

QSEN/IPE Competencies: Patient Centered Care, Patient Safety/IPE: Team Work, Communication

PT/Nursing Practice Standards:

Integumentary assessment, Identification of hemodynamic instability and appropriate response, Collaborate appropriately with other discipline (PT/RN), Equipment use, Patient mobilization in ICU, Identification of patient change in condition in sepsis including potential source, Orthotic management, Identification, intervention, and documentation of wounds, Line management

Brief Summary of Case: 76 year old male s/p ground level fall four days prior. Patient was brought in by ambulance and admitted for acute L4/L5 compression fractures. The trauma team determined that the injury was nonoperative and ordered the patient a Thoraco-Lumbo-Sacral Orthosis (TLSO). The orthotics team placed the TLSO on the patient on day 1 with an order to "Wear TLSO for OOB activity only; May don/doff when seated at edge of bed." PT evaluated the patient on day 2, but he was in too much pain to get OOB. On day 3 the patient developed sepsis and was admitted to the ICU, where he was stabilized. It is now day 4 and the PT has come to the ICU to mobilize the patient for the first time with nursing support.

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SECTION II: CURRICULUM INTEGRATION

A. SCENARIO LEARNING OBJECTIVES
Learning Outcomes
1. Cognitive: Understand interdisciplinary roles, orthotic indications, assessment and application; assessment of sepsis, pain, and hemodynamics.
2. Affective: Provide compassionate care for the patient while engaging in inter-professional, supportive collaboration.
3. Psychomotor: Demonstrate safe patient handling and orthotic management with proper body mechanics for both patient and care provider.
Specific Learning Objectives
1. Demonstrate appropriate interdisciplinary communication and collaboration.
2. Demonstrate how to perform functional mobility screen with appropriate body mechanics.
3. Monitor patient vitals and identify when activity should be terminated for safety.
4. Identify skin breakdown, intervene as appropriate and perform proper documentation.
5. Verbalize appropriate orthotic management.
6. Educate patient about care plan, progress, and problems.
7. Discuss clinical presentation of sepsis and identify potential causes.
Critical Learner Actions
1. RN to introduce self to patient and begin assessment.
2. PT to introduce self to patient and RN and request permission to mobilize.
3. PT & RN to screen vitals as PT initiates in-bed mobility assessment.
4. RN to continue assessment in tandem with PT mobility.
5. PT to assist patient to sitting EOB, instructing RN to assist (if needed).
6. PT & RN to screen vitals once patient is at edge of bed.
7. PT & RN to recognize significant drop in BP and increase in HR, but determine that it is appropriate to continue to monitor the patient and assess for stabilization without aborting mobility session.
8. Upon stabilization of vital signs, PT & RN proceed with exercise or standing activity, as appropriate.
9. PT & RN screen vitals, identify symptomatic orthostatic hypotension, and return the patient to supine.
10. PT & RN screen vitals and remove the TLSO—recognize presence of sacral wound.*
11. RN determines proper actions including proper wound staging, intervention level and documentation.
*Identification of blood on patient's gown, removal of TLSO, and discovery of wound may occur at any point during simulation.

B. PRE-SCENARIO LEARNER ACTIVITIES		
Prerequisite Competencies		
Knowledge	**Skills**	**Attitudes**
❑ Complete online quiz (See Appendix D) regarding ICU early mobility and contraindications for mobilizing patients who are critically ill in an ICU setting following a lecture or reading assignment based on Nordon-Craft et al., 2012 & Marra et al. (2017). ❑ Ability to determine abnormal vitals signs as precautions or contraindications to mobilization. ❑ Identify various signs and symptoms prompting further patient assessment.	❑ Monitor and interpret vital signs. ❑ Make clinical decisions of whether to mobilize a patient based on sound reasoning. ❑ Determine acceptable fluctuation ranges in vital signs that warrant caution versus the need to abort early mobility in the ICU setting. ❑ Collaborate between disciplines when making clinical decisions regarding patient care.	❑ Collaborative interprofessional approach to patient needs. ❑ Recognize patient vulnerability in ICU setting. ❑ Patient-centered interactions.
❑ Complete online quiz (See Appendix E) regarding use and complications related to orthotics based on Elia et al. (2018), after a hands-on lab. ❑ Identify precautions associated with orthotic use, especially related to integument. ❑ Verbalize understanding of purpose of, management of, and maintenance of common spinal orthotics.	❑ Appropriately don/doff various spinal orthotic device(s). ❑ Maintain patient's spine in neutral when donning/doffing spinal orthotic devices. ❑ Perform appropriate skin assessment. ❑ Follow infection precautions protocols. ❑ Educate patient about spinal orthotics: how to apply, manage, and maintain the device.	❑ Approach patient with sensitivity to pain related to injury. ❑ Listen to and explore patient complaints of pain. ❑ Commitment to ensuring patients understand and take an active role in their care plan.
❑ Identify proper body mechanics for both the clinician and the patient to reduce the risk of injury. ❑ Verbalize understanding of safe patient handling techniques. ❑ Identify parts and function of hospital bed features. ❑ Verbalize roles and number of personnel for safe patient mobilization.	❑ Demonstrate proper body mechanics while performing patient care. ❑ Identify and manage lines appropriately when mobilizing a patient in the ICU. ❑ Utilize hospital bed features to optimize safe patient handling.	❑ Always be cognizant of body mechanics—even when not directly touching a patient. ❑ Collaborative interprofessional approach to patient care.

	❑ Communicate and coordinate with other personnel to mobilize a dependent patient.	❑ Plan movements with all personnel, including the patient. ❑ Practice clear, open communication strategies.
❑ Verbalize understanding of spine mechanics and precautions/ contraindications after a spinal fracture.	❑ Provide patient education about precautions following a spine fracture. ❑ Facilitate maintenance of neutral spine (log roll and move supine<->sit without spinal flexion or rotation) in a patient while assisting them in/out of bed. ❑ Teach patients how to maintain spinal precautions.	❑ Utilization of interactive teaching techniques, such as the Teach Back Meathod. ❑ Let the patient set the pace of the mobility activities. ❑ Empower patients to move safely.
❑ Verbalize understanding of the clinical presentation and management of sepsis.	❑ Screen vital signs relevant to the clinical presentation of sepsis. ❑ Make recommendations for care based on patient assessment	❑ Thorough investigation of potential causes of symptoms.
❑ Express familiarity with wounds, staging, wound care options, and documentation.	❑ Properly assess a patient with a wound. ❑ Perform proper measurement and staging of a wound ❑ Document wounds and recommendations for follow up care. ❑ Implement wound prevention strategies.	❑ Thorough investigation of cause(s) of wound and wound prevention options. ❑ Forthright conversation with patient regarding wound and related care actions.

SECTION III: SCENARIO SCRIPT

A. Case summary
76 year old male s/p ground level fall four days prior. Patient was brought in by ambulance and admitted for acute L4/L5 compression fractures. The trauma team determined that the injury was nonoperative and ordered the patient a Thoraco-Lumbo-Sacral Orthosis (TLSO). The orthotics team placed the TLSO on the patient on day 1 with order to "Wear TLSO for OOB activity only; May don/doff when seated at edge of bead." PT evaluated the patient on day 2, but he was in too much pain to get OOB. On day 3 the patient developed sepsis and was admitted to the ICU, where he was stabilized. It is now day 4 and the PT has come to the ICU to mobilize the patient for the first time with the assistance of the nurse.

B. Key contextual details
The orthotics team placed the TLSO on the patient on day 1 with order to "Wear TLSO for OOB activity only; May don/doff when seated at EOB." *If asked,* the patient has been wearing TLSO continuously since it was placed by orthotics over 2 days ago due to pain.

C. Scenario Cast		
Patient/ Client	X High fidelity simulator (This could be run with a standardized patient.)	
	❑ Mid-level simulator	
	❑ Task trainer	
	❑ Hybrid (Blended simulator)	
	❑ Standardized patient	
Role	Brief Descriptor (Optional)	Confederate/ Actor (C/A) or Learner (L)
RN	The simulation will start when you enter the room to perform your nursing assessment on your patient. You will get a brief report from the night shift nurse, who will be at bedside. You will be expected to collaborate with a PT as they attempt to mobilize your patient out of bed. You are responsible for assessing the patient and determining safety to ambulate with assistance	L
PT	You are expected to seek permission from the RN and the patient to mobilize the patient out of bed. You should perform an in-bed mobility screen, assist the patient to sitting at the edge of the bed, assist the patient with exercising at the edge of the bed, and transfer the patient into the bedside chair if the patient tolerates it. You are responsible for collaborating with the nurse, for monitoring vitals to guide your progression with the patient, and for directing personnel in the room to assist with patient mobility	L
PT aide	You are the extra set of hands in the room to assist the PT with patient handling, line management, etc	L
CNA	You are the extra set of hands for the room to assist the RN with patient handling, lines, recording vitals, etc	L
NOC RN	You will give a brief report to the nursing student as they enter the room. Give a brief introduction, list any medication or order updates, and then excuse yourself fairly quickly after bidding farewell to the patient. Let the student know that the MD ordered PT to come mobilize the patient soon.	C/A

D. Patient/Client Profile				
Last name:	Jones	First name:		Mike
Gender: Male	Age: 76	Ht: 5'9"	Wt: 73 kg (161lbs)	Code Status: Full
Spiritual Practice: Undeclared		Ethnicity: Caucasian		Primary Language spoken: English

1. Past history	
Surgical hypothyroidism, COPD, Paroxysmal A fib, HTN, BPH, and frequent UTIs--recently completed a 10-day course of Cipro for a UTI.	
Primary Medical Diagnosis	L4/L5 compression fracture Complicated by suspected Sepsis

2. Review of Systems	
CNS	Strength & Sensation intact. Diminished hearing and visual acuity. 2+ reflexes.
Cardiovascular	S1/S2. Mild systolic murmur. Rapid rate, but no clicks or gallops.
Pulmonary	Clear to auscultation bilaterally. No rales or ronchi.
Renal/Hepatic	Urinary frequency and retention due to BPH.
Gastrointestinal	Abdomen non-tender, normal active bowel sounds. Normal BM every 2 days.
Endocrine	On Levothyroxine.
Heme/Coag	On Coumadin.
Musculoskeletal	Guarded during exam due to severe low back pain. Unable to actively lift legs.
Integument	No rashes or ulcerations visualized on face, abdomen, or extremities.
Developmental Hx	Completed Bachelor's degree in History before working for USPS.
Psychiatric Hx	No significant history.
Social Hx	Retired from postal service 10 years ago. Wife lives at home, but she is disabled from Alzheimer's. Daughter (lives next door) is primary caregiver for patient's wife.
Alternative/ Complementary Medicine Hx	Takes a daily multivitamin and Calcium supplement.

Medication allergies:	Penicillin	Reaction:	Rash and nausea
Food/other allergies:	Lactose intolerance	Reaction:	Diarrhea

3. Current medications	Drug	Dose	Route	Frequency
	Coumadin	5mg	Oral	1X/day
	Lisinopril	5 mg	Oral	2X/day
	Levothyroxine	1.25mg	Oral	1X/day
	Albuterol	2 MDI puffs	Inhalation	PRN
	Protonix	40 mg	Oral	1X/day

4. Laboratory, Diagnostic Study Results (current)					
Na: 135mEq/L	K: 3.8 mEq/L	Cl: 101 mEq/L	HCO3:27 mEq/L	BUN: 8mg/dL	Cr: 1.3mg/dL
CO2: 25 mEq/L	Mg:	Phos:	Glucose:99mg/dL	Lactic Acid: **3.3** mmol/L (ref: 0.4-1.3 mmol/L)	
Hgb: 12.3g/dL	Hct: 37%	Plt: 330K/mm3	WBC: **15K**/mm^3 (ref:4.5-11K/mm^3)	ABO Blood Type: A+	
RBC:4.4K/MM3	PTT	INR: 2.2	Troponin: 17ng/L	BNP:	
ABG-pH:	paO2:	paCO2:	HCO3/BE:	SaO2:	
VDRL:	GBS:	Herpes:	HIV:	Cxr:	EKG

E. Baseline Simulator/Standardized Patient State (This may vary from the baseline data provided to learners)					
1. Initial physical appearance					
Gender: Male	Attire: Hospital gown with TLSO underneath & alternating leg pressure devices (ALPs). Patient with 2 PIVs (arm), BP cuff (arm), pulse oximeter (finger), ECG leads (chest), temperature probe (armpit), Foley catheter, & nasal cannula (2Lpm).				
Alterations in appearance (moulage): Sacral wound over or between posterior inferior iliac spines (concealed by the TLSO). Some blood on the fitted sheet and/or hospital gown.					
X	ID band present, accurate		ID band present, inaccurate		ID band absent or not applicable
	Allergy band present, accurate		Allergy band inaccurate	X	Allergy band absent or N/A

2. Initial Vital Signs Monitor display in simulation action room:					
	No monitor display		Monitor on, but no data displayed	X	Monitor on, standard display
BP: 110/50mmHg	HR: 110bpm	RR: 18 bpm	T: 37.0 C	SpO^2: 96%	
CVP:	PAS:	PAD:	PCWP:	CO:	
AIRWAY:	ETCO^2:	FHR:			
Lungs: Sounds/mechanics	Left: Normal	Right: Normal			
Heart:	Sounds: Normal				
	ECG rhythm: sinus tachy				
	Other:				
Bowel sounds:		Other: 3/10 back pain “aching and burning.”			

3. Initial Intravenous line set up						
x	**Saline lock #1**	Site: R hand				IV patent (Y/N) yes
x x x	**IV #1** Main Piggyback	Site: PIV R arm		Fluid type: Normal Saline	Initial rate: 100/hr	IV patent (Y/N) yes
  	IV #2 Main Piggyback	Site: PICC L arm		Fluid type: Vancomycin	Initial rate:	IV patent (Y/N) yes
4. Initial Non-invasive monitors set up						
X	NIBP	X	ECG First lead:	X	ECG Second lead:	
X	Pulse oximeter	X	Temp monitor/type	X	Other: Nasal cannula	
5. Initial Hemodynamic monitors set up						
	A-line Site: N/A		Catheter/tubing Patency (Y/N)		CVC Site:	PAC Site:
6. Other monitors/devices						
x	Foley catheter	Amount: 150 ml		Appearance of urine: yellow, cloudy		
	Epidural catheter	X	Infusion pump:	Pump settings:		
	Fetal Heart rate monitor/tocometer			Internal	External	

Environment, Equipment, Essential props

Recommend standardized set ups for each commonly simulated environment

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

Patient's room should be setup to resemble an ICU. The patient should be in a hospital bed on monitors. Bedside table should have water cup, & incentive spirometer in place. Call light nearby.

Mileu attached to the patient

- ❑ PICC attached to Vancomycin (right UE)
- ❑ PIV attached to normal saline (left UE)
- ❑ Foley catheter
- ❑ 5 lead ECG
- ❑ BP cuff
- ❑ Pulse oxygen sensor
- ❑ Nasal cannula
- ❑ Alternating Leg Pressure cuffs (ALPs)
- ❑ TLSO (Preferably a custom bivalve "clamshell")

Moulage

- ❑ Bedside commode
- ❑ Bed pan
- ❑ Blood on gown and sheets
- ❑ Wound at base of TLSO (See Appendix B)

2. Equipment, supplies, monitors (In simulation action room or available in adjacent core storage rooms)							
	Handheld Urinal		Foley catheter kit		Straight cath. kit	X	Incentive spirometer
X	IV Infusion pump		Feeding pump		Pressure bag	x	Wall suction
	Nasogastric tube		ETT suction catheters		Oral suction catheters		Chest tube kit
	Defibrillator	X	Code Cart		12-lead ECG		Chest tube equip
	PCA infusion pump		Epidural pump		Central line Kit	X	Dressing Δ equip
X	IV fluid Type: **Maintenance**	x	IV fluid: **Vancomycin**		Blood products:____ ABO Type: ___ # of units:__		

X	Nasal cannula		Face tent		Simple Face Mask		Non-rebreather mask
X	BVM/Ambu bag		Nebulizer tx kit		Flowmeters (extra supply)		
X	ECG – 5 lead	X	Bedside commode	X	Bed pan		

4. Documentation and Order Forms							
X	Provider orders	X	Med Admin Record	X	Hx & Physical	X	Lab Results
X	Progress Notes		Graphic record		Anes/PACU record		ED Record
	Med Reconciliation		Transfer orders	X	Standing orders		ICU flow sheet
X	Nurses' Notes		Dx test reports		Code Record		Prenatal record
X	Actual medical record binder				Electronic Medical Record		

5. Medications (to be available in sim action room)								
#	**Medication**	**Dosage**	**Route**		**#**	**Medication**	**Dosage**	**Route**
	Norco	5/325 mg tab	oral			Vancomycin	1 gram	IV
	Tylenol	650 mg tab	oral					
	Zofran	4 mg vile	IV					
	Lactulose	30 ml cup	oral					

CASE FLOW / TRIGGERS/ SCENARIO DEVELOPMENT STATES			
Initiation of Scenario: During pre-briefing the nursing students will be told they will receive a brief handoff report from the night shift RN (played by nursing faculty). RN verbal report (see Appendix F) should include that patient was given lactulose in AM to stimulate bowel movement. The physical therapy students will be told to enter within one minute after the nursing student enters the room. The operator will announce the start of the scenario and the RN student shall enter the room to meet the nursing faculty to receive a brief bedside handoff report. The patient will be in bed and alert.			
STATE / PATIENT STATUS	**DESIRED LEARNER ACTIONS & TRIGGERS TO MOVE TO NEXT STATE**		
1. Baseline BP 110/50mmHg, HR 110bpm, T 37.0C, O2 96% 2L nc, RR 18 bpm Pain 3/10 low back ache and burning _____ Tired & Cranky, but feeling better enough to try getting out of bed. "I've been laying in this brace for 3 days! It's starting to dig into my back." If asked about fall: "I tripped backward over the damn cat when I was pulling the laundry out of my dryer."	**Operator:** *If 4 minutes elapse* Start complaining: "I gotta take a crap! I won't be able to go on that stupid bed pan. Help me sit up! I want to get to that commode!" **Triggers:** Physically moving the patient from supine to sitting up at the edge of the bed.	**Learner Actions** RN Actions: Introduction, ID patient, Assess patient: Mental Status, Start Skin Check, Review Meds. PT Actions: Ask RN permission to mobilize patient, Consent the patient and inform them (and RN) of care plan, Collaborate with RN on current patient assessment, Auscultation, Screen functional mobility in bed (ability to stand?), Supine bed exercises advance to seated on edge of bed.	**Debriefing Points:** **Setting the Scene** "Let's take 15 minutes to discuss this case as a group so we can collaborate to learn how to improve the care we give to our patients." **Reaction** 1. How are you feeling? 2. How did you feel about the interdisciplinary communication, clarity of roles, & expectations of each person? **Description** 1. How did the patient present at the onset of the case? 2. What was the diagnoses? **Analysis** 1. Were there precautions or contraindications to early mobility in this case? 2. Was there an appropriate subjective and objective screen prior to mobilizing? 3 . Was the patient treated as part of the team?

STATE / PATIENT STATUS	**DESIRED ACTIONS & TRIGGERS TO MOVE TO NEXT STATE**		
2. BP 100/48mmHg*, HR 125bpm, T unchanged, O2 97% 2L nc, RR 22bpm, Pain 5/10 *BP will not show on monitor unless one of the learners cycles the BP cuff.	**Operator:** If clinicians are planning to lie patient down be very insistent that you feel fine. Back pain 5/10. "What's the problem? I feel fine! My back hurts from sitting in this bed too much." "I need to have a bowel movement. I've been having cramps and feel like I'm going to explode" If clinicians are planning to stand the *mannequin* patient then you can suggest: "I've got a hamstring cramp; can you stretch my leg?" If the scenario time reaches 8 minutes, ask the clinicians to help you exercise your legs. **Triggers:** Engaging the patient in seated exercises or attempting to initiate a stand with the mannequin at bedside.	**Learner Actions:** RN Actions: Screen & Interpret vitals, Protect lines, Physically Assist PT on request. PT Actions: Screen & Interpret vitals, Cue RN to assist physically assist if needed, Collaborate with RN on whether to return to bed, **wait and re-assess**, or proceed with activity. Engage in seated activity or sit-to-stand with patient, demonstrating appropriate guarding.	**Debriefing Points:** **Analysis** 1. What are your thoughts on your environmental setup and line management? 2. Was your communication with and direction of personnel effective? 3. Did everyone in the room demonstrate safe patient handling techniques and appropriate body mechanics at all times? 4. What factors influenced your decision to proceed, abort, or wait once you first got the patient sitting up on the edge of the bed (clinical reasoning)?

STATE / PATIENT STATUS	DESIRED ACTIONS & TRIGGERS TO MOVE TO NEXT STATE		
3. BP 88/45mmHg, HR 140bpm, T unchanged, O2 93% 2L nc, RR 28bpm, Pain 7/10, Nauseated, diaphoretic, feeling light-headed, exhibiting alteration of alertness & mental status.	**Operator:** "Oh, I'm feeling hot and dizzy...Oh, I think I'm seeing stars...I might vomit. Is there a bucket?" If clinicians don't lie the patient down. "I think I'm going to faint! Lie me down!" **Triggers:** Returning the patient to supine in bed.	**Learner Actions:** RN Actions: Screen and interpret vitals, Cue PT to stop activity, Protect lines as pt lies down PT Actions: Screen and interpret vitals, Recognize hypotension and make patient sit or lie down immediately, Have patient lie down once recognizing that the patient is not recovering and rapidly declining into syncopal episode. Use good body mechanics when assisting the patient back to bed. Re-assess the patient once supine.	**Debriefing Points:** **Analysis** 1. Once you started to exercise the patient at the edge of the bed, what factors influenced your decision to proceed, abort, or wait (clinical reasoning)? 2. What is the clinical presentation of sepsis? 3. Did this patient present with orthostatic hypotension? How do you know? 4. Were you able to maintain continued collaboration and interaction with patient?

STATE / PATIENT STATUS	DESIRED ACTIONS & TRIGGERS TO MOVE TO NEXT STATE		
4. BP 118/50 mmHg, HR 120bpm, T unchanged, O2 95% 2L nc, RR 22bpm, Pain 7/10 Looking distressed due to pain in back, but no longer feeling like fainting.	**Operator:** "Oh! My back really hurts—its really pinching and burning!" (7/10 pain) If the scenario time reaches 13 minutes ask the clinicians to help roll you off of your back because the pain is so bad. **Triggers:** Removal of TLSO with subsequent identification of wound and verbalization of learners to address this new finding (e.g. call the MD, order a wound consult, plan to get dressing supply, plan to avoid pressure to this area, etc.)	**Learner Actions:** RN Actions: Subjective and focused objective assessment of patient, Request PT assistance with removal of TLSO, Skin Assessment. Recognize blood on gown and identify wound on sacrum. Stage wound with proper descriptors, including measurements. Refer to wound RN for proper dressing and management. PT Actions: Assist RN with positioning patient for comfort. Remove TLSO with appropriate body mechanics. Educate RN and patient about TLSO wear schedule, Assist RN with cueing patient to maneuver in bed (e.g. log rolling/neutral spine) for skin check. Help RN identify source of blood on gown. Debrief patient on their performance and care plan.	**Debriefing Points:** **Analysis** 1. What is the purpose of the TLSO? What is the wearing schedule for the TLSO? How is a TLSO properly donned/doffed? 2. Could this patient have simply worn and LSO brace instead of a TLSO brace since his injury was only reported to the lumbar spine? 3. What are some of the complications related to wearing orthotics? 4. Whose responsibility is it to manage the orthotic and check the patient's skin integrity? 5. What should you do if you believe you believe a medical prescription is resulting in a complication (e.g. a wound)? **Summary/Deepening** "What did you learn from this scenario? How will this experience affect your future clinical practice?"
Scenario End Point: Once the final trigger is achieved and the operator/faculty are satisfied with wrap up (or the 20 minute time limit is reached) either the operator can call out the end of the simulation or the NOC nurse (faculty) can return to receive a report from the students prior to debriefing.			
Suggestions to decrease complexity: Use off-the-shelf TLSO. Have the patient be very compliant and verbally transparent. The MD could "call in" and authorize clinicians to continue the mobility session after RN places dressing over wound (if it is found early in the simulation, creating confusion).			

Suggestions to <u>increase</u> complexity: Use custom bivalve "turtle shell" TSLO. The patient can be crankier, more demanding & less transparent. Add more lines or put lines in trouble spots (e.g. the foot). Leave the hospital bed unlocked. Have the patient be in A fib at baseline.

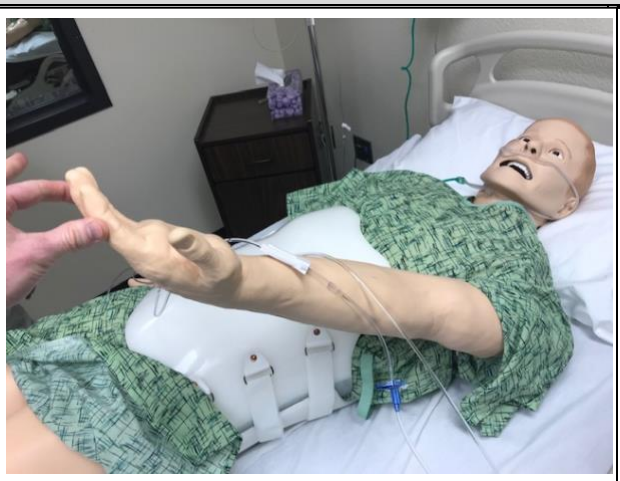
APPENDIX A: HEALTH CARE PROVIDER ORDERS (See Appendix G for full Bedside Chart)

Patient Name: Mike Jones **DOB: 3/7/1943** **Age: 76** **MR#: 9105701**	**Diagnosis:** **L4/L5 compression fractures** **Sepsis**

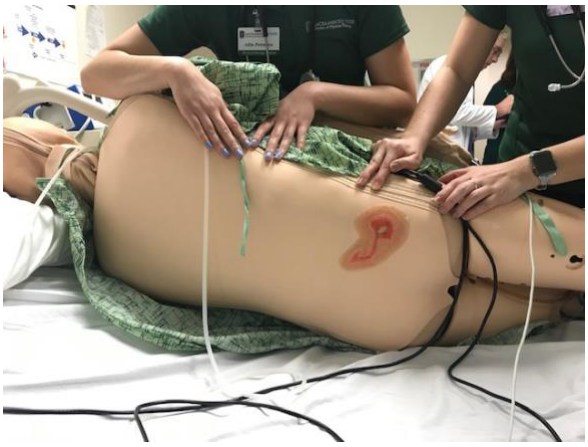
☐ Allergy Alert: Penicillin

Date	Time	**HEALTH CARE PROVIDER CURRENT ORDERS AND SIGNATURE**
12/6/19	8:00AM	Labs: CBC, CMP
12/6/19	8:00AM	Sputum Culture
12/6/19	8:00AM	Pulmonary Function test
12/6/19	8:00AM	Normal Saline 75 ml/hr
12/6/19	8:00AM	PT to evaluate and treat—ICU early mobility
12/6/19	8:00AM	Oxygen: Titrate to keep O2 sat >92%
12/6/19	6:00AM	Lactulose 30mL cup once daily until first BM
12/5/19	3:30PM	Norco Tablet 5/325 mg every 4 hours PRN for pain
12/5/19	3:29PM	Tylenol 650mg every 6 hours PRN for temp >102
12/5/19	8:00AM	Zofran 4mg IV every 4 hours PRN for nausea
12/5/19	7:00AM	Vancomycin 1 gm every 12 hours, no loading dose, run over 1 hour; pharmacy to monitor trough levels and creatinine and adjust dose.
12/5/19	6:00AM	Transfer to ICU
12/5/19	5:30AM	U/A with C&S, Lactate now
12/5/19	5:05AM	IV: Lactated Ringers 30 ml/kg over 60 minutes, then 150 ml/hr x 24 hours
12/5/19	5:00AM	Labs: CBC, CMP
12/4/19	10:00AM	PT evaluation for mobility & discharge needs
12/4/19	8:00AM	Activity: Spine cleared with TLSO--Wear TLSO for OOB activity only
12/4/19	8:00AM	Orthotics—Fit patient with TLSO. May don/doff when seated at EOB.
12/3/19	9:05PM	Protonix 40mg PO once daily
12/3/19	9:05PM	Coumadin 5 mg PO once daily
12/3/19	9:05PM	Lisinopril 5mg PO BID daily
12/3/19	9:05PM	Levothyroxine 1.25mg PO once daily
12/3/19	9:05PM	Albuterol 2 puffs MDI q 6 hours PRN
12/3/19	9:00PM	Diet: Cardiac diet with extra Ensure shakes
12/3/19	9:00PM	Intermittent pneumatic compression devices both LEs
12/3/19	9:00PM	Full resuscitation
12/3/19	7:00PM	Admit to ortho unit
12/3/19	6:00PM	X-ray of spine—recent fall with back pain
12/3/19	6:00PM	INR, CBC, C7 in 3 days
Signature		Dr. SterkFinn

APPENDIX B: **Digital images of manikin and/or scenario milieu**



Mannequin with bivalve TLSO TLSO is fitted over the gown.



Location of wound with TLSO removed. Blood not used in pilot.

Edge of wound can be visible from under TLSO or hidden under gown.

General setup of ICU room. TLSO has been removed. Commode and bedpan are not pictured.

APPENDIX C: DEBRIEFING GUIDE

General Debriefing Plan			
--Individual	X Group	☐ With Video	X Without Video
Debriefing Materials			
☐ Debriefing Guide	X Objectives	☐ Debriefing Points	☐ QSEN
QSEN Competencies to consider for debriefing scenarios			
X Patient Centered Care	X Teamwork/Collaboration	☐ Evidence-based Practice	
X 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. What RELEVANT information was missing from the scenario that impacted your performance? How did you attempt to fill in the GAP?
5. How would you handle the scenario differently if you could?
6. Did you feel the need to check ACCURACY of the data you were given? Did you verify data?
7. In what ways did you perform well?
8. What communication strategies did you use to validate ACCURACY of your information or decisions with your team members?
9. What three factors were most SIGNIFICANT that you will transfer to the clinical setting?
10. At what points in the scenario were your nursing actions specifically directed toward PREVENTION of a negative outcome?
11. Discuss actual experiences with diverse patient populations.
12. Discuss roles and responsibilities during a crisis.
13. Discuss how current nursing practice continues to evolve in light of new evidence.
14. Consider potential safety risks and how to avoid them.
15. Discuss the nurses' role in design, implementation, and evaluation of information technologies to support patient care.

Notes for future sessions: This scenario could be run with a standardized patient instead of a mannequin, which would increase the realism and enable more focus on patient mobility and patient handling skills.

APPENDIX D: Quiz questions based on Marra et al. (2017) & Nordon-Craft et al. (2012)

1. Potential body/structure effects of critical illness are:
   A) Orthostatic hypotension
   B) Altered postural control/balance
   C) Altered glucose control
   D) Skin breakdown
   E) All of the above

2. All patients admitted to the ICU should be stabilized on bedrest for at least 48 hours before mobilizing out of bed with nursing or therapy staff in order to ensure safety:
   A)True
   B)False

3. Which parameter below would indicate a contraindication for PT interventions in the ICU:
   A) SpO2: 92% on 2LO2
   B) Respiratory rate: 28bpm
   C) Heart rate: 105bpm
   D) Blood pressure: 99/60mmHg
   E) None of the above

4. Which of the following would be a reason to stop mobilizing a patient in the ICU:
   A) SpO2 drops from 98% to 93% on room air
   B) Mean arterial pressure increases from 70 to 90mmHg
   C) Heart rate increases from 80 bpm to 110bpm
   D) ECG demonstrates new-onset atrial fibrillation
   E) None of the above

5. A physical therapist can do which of the following with critically ill patients in the ICU:
   A) Teach respiratory strategies and perform noninvasive airway clearance techniques
   B) Engage in patient and family education, which may include ROM/exercises
   C) Start functional mobility training and/or gait training
   D) All of the above
   E) None of the above. It is not safe to start PT on critically ill patients in the ICU.

6. Delirium is often:
   A) A gradual cognitive decline that occurs in patients only after several days in an ICU
   B) Characterized by agitation, restlessness, and emotional lability
   C) Characterized by decreased responsiveness, withdrawal, & apathy
   D) Both A & B
   E) Both B & C

7. Risk factors for delirium are:
   A) Advanced age & pre-existing cognitive impairment
   B) Mechanical ventilation & prolonged immobilization
   C) Untreated pain & sleep deprivation
   D) Abnormal blood pressure & sepsis
   E) All of the above

8. What is the most effective way to decrease the number of days a patient has delirium?
   A) Medications such as benzodiazepines
   B) Sunlight
   C) Early mobility
   D) Removal of restraints
   E) Presence of family

9. The ABCDEF bundle in critical care stands for:
   A) Airway, Breathing, Circulation, Drugs, Emergency, Fibrillation
   B) Airway, Breathing, Circulation, Delirium, Early mobility, Facilitate alterness
   C) Assess/manage pain, Both spontaneous awakening & breathing trials, Choice of analgesia/sedation, Delirium assessment/prevention, Early mobility, Family engagement
   D) Assess patient, Breathing trial, Communicate, Discontinue restraints, EMR documentation, Family engagement
   E) Assess/manage pain, Both spontaneous awakening & breathing trials, Choice of analgesia/sedation, Documentation, Early mobility, Facilitate communication

10. Determining whether a patient is safe to mobilize in the ICU is the role of which care provider?
   A) The doctor
   B) The bedside nurse
   C) The physical therapist
   D) The respiratory therapist
   E) All of the above

Answer Key

1. E
2. B
3. E
4. D
5. D
6. E
7. E
8. C
9. C
10. E

APPENDIX E: Orthotics Lab Questionnaire

Q1-6: Matching: Match the following images with the associated type of brace

1. Thoracic-lumbar-sacral orthotic (TLSO) brace
2. Lumbar-sacral orthotic (LSO) brace
3. Cervical collar
4. Cervical-thoracic orthotic (CTO)
5. Halo vest
6. Bivalve (custom) Thoracic-lumbar-sacral orthotic (TLSO) brace

Q7. Do you feel **MORE** comfortable taking care of patients with spinal precautions? (Y/N)

Q8. Does a Halo vest need to be removed for CPR? Y/N

Q9. Does a TLSO brace need to be worn at all times in patients with spinal precautions? (Y/N)

Q10. Does the cervical spine need to be stabilized when transferring/rolling a patient if they already have a cervical collar on? (Y/N/Depends--on fit of collar and stability of C-spine)

Q11. Cervical collar could cause pressure ulcers of:

A. chin

B. occiput

C. clavicle area

D. all of the above

Q12: What can be done to minimize pressure ulcers for cervical collars?

A. Make sure the patient's neck is hyper-extended

B. Examine the skin around the collar and bony prominences every shift

C. Make sure the collar is loosely fitting

D. Taking the collar off when transferring the patient

E. B and C are both correct

Q13: LSO/TLSO brace must be worn at all times, even when laying flat in bed? (T/F)

Q14: Improper fitting CTO brace can lead to:

A. Respiratory distress
B. Difficulty swallowing
C. Pressure ulcers
D. All of the above

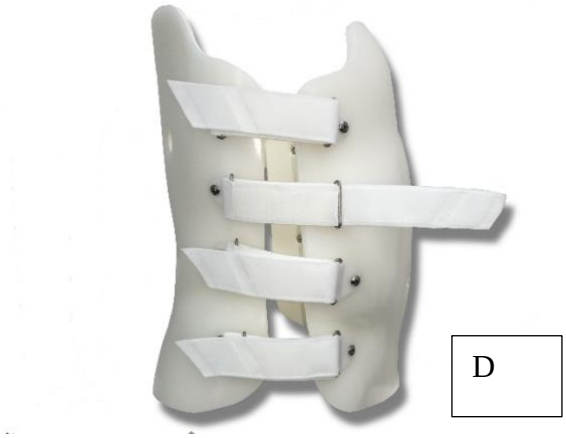
Q15: Which healthcare provider is responsible for inspecting a patient's skin integrity in areas that come into contact with orthotic medical devices?

A. The nurse
B. The orthotist
C. The physical therapist
D. The occupational therapist
E. All of the above


A


B


C


D

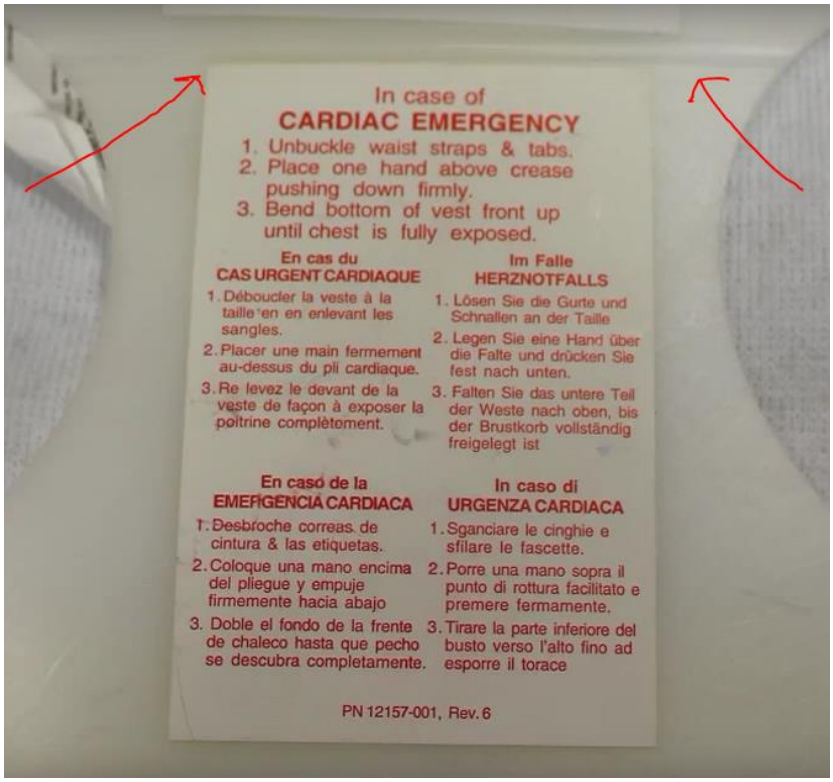

E

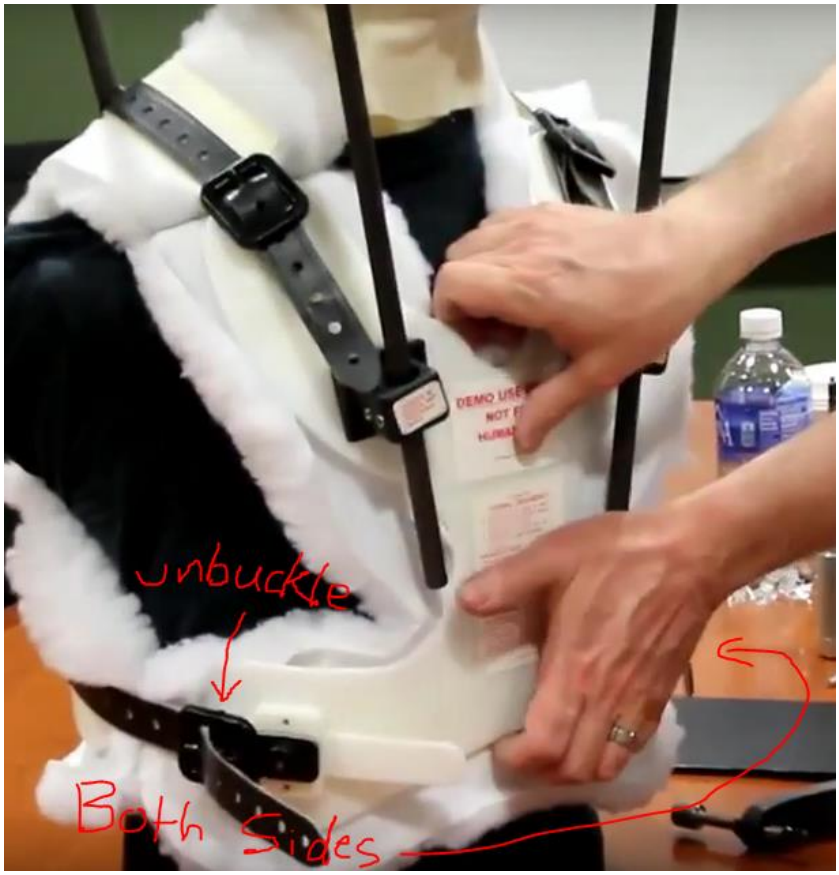

F

Post-Test Quiz Answer Key

1. E
2. C
3. A
4. B
5. F
6. D
7. Yes*
8. No, but breast plate might (See pictures attached)
9. No
10. Depends*
11. D
12. B
13. F
14. D
15. E

*Denotes that item may warrant further class discussion


In case of
CARDIAC EMERGENCY
1. Unbuckle waist straps & tabs.
2. Place one hand above crease pushing down firmly.
3. Bend bottom of vest front up until chest is fully exposed.
En cas du CAS URGENT CARDIAQUE
1. Déboucler la veste à la taille en en enlevant les sangles.
2. Placer une main fermement au-dessus du pli cardiaque.
3. Re levez le devant de la veste de façon à exposer la poitrine complètement.
Im Falle HERZNOTFALLS
1. Lösen Sie die Gurte und Schnallen an der Taille
2. Legen Sie eine Hand über die Falte und drücken Sie fest nach unten.
3. Falten Sie das untere Teil der Weste nach oben, bis der Brustkorb vollständig freigelegt ist
En caso de la EMERGENCIA CARDIACA
1. Desbroche correas de cintura & las etiquetas.
2. Coloque una mano encima del pliegue y empuje firmemente hacia abajo
3. Doble el fondo de la frente de chaleco hasta que pecho se descubra completamente.
In caso di URGENZA CARDIACA
1. Sganciare le cinghie e sfilare le fascette.
2. Porre una mano sopra il punto di rottura facilitato e premere fermamente.
3. Tirare la parte inferiore del busto verso l'alto fino ad esporre il torace
PN 12157-001, Rev. 6


unbuckle
Both Sides

APPENDIX F: Nursing Bedside Report

Situation: 76-year-old male s/p ground level fall four days ag. Patient was brought in by ambulance (BIBA) and admitted for acute L4/L5 compression fractures. Trauma team determined that the injury was non-operative and ordered the patient a Thoraco-Lumbo-Sacral Orthosis (TLSO) brace. The orthotics team placed the TLSO on the patient on day 1 and ordered PT to evaluate the patient on day 2. On Day 2 the patient was in too much pain to get Out of Bed (OOB). On day 3 the patient developed sepsis and was admitted to the ICU, where he is currently. He seems to be stabilizing.

Background History: Surgical hypothyroidism, COPD, BPH, Paroxysmal A fib, HTN, and frequent urinary tract infections (recently completed a 10-day course of Cipro for a UTI).
No known medication allergies. He quit smoking 10 years previously.

Social History: Retired from postal service 10 years ago. Wife lives at home but is disabled from Alzheimer's. Daughter (lives next door) is primary caregiver for patient's wife.

Assessment:

Vitals -

Pulse: 110bpm
BP: 110/50mmHg
T: 37.0 c
RR: 18bpm
SpO2: 96% 2L nc

A/Ox4; Lung sounds diminished with some wheezing and is developing a productive cough; bowels were sluggish last night, but he is complaining of cramping and "gurgling" this morning. No bowel movement since admission. He did receive lactulose last evening. He's complaining of low-level back pain, but declined pain meds this morning. Weight gain of 3 kg since admit. Currently have O2 at 2 L nasal cannulus (N/C). I've started his Vancomycin just now. He not using his incentive spirometer (IS) much, stating that the deep breaths are painful. The MD ordered a STAT portable chest x-ray and sputum culture.

Recommendations: PT evaluation this AM. Possible transfer later today to med/surg unit. Probably should discontinue the fluids as soon as possible.

APPENDIX G: Bedside Chart

PT NAME: Mike Jones
DOB: 4/25/1943
MR # 9105701

BEDSIDE CHART

Home Meds: Coumadin 5mg with changes managed by the clinic, Lisinopril 5 mg, levothyroxine 125 mcg, albuterol 2 MDI puffs PRN

LABS	Normal Ranges	AM Today	Yesterday	Admit
WBC	5.0-11.5 K/MM3	15	18	12
RBC	3.7-5.5 K/MM3	4.4	4.2	4.3
Hbg	12-16 gm/dl	12.3	12.9	13.6
HCT	34-46 %	37.	39.4	41.
Platelet count	130-400 K/MM3	330	320	416
RDW	0.0-14.7 Units			
Blood Type				A+
Neutrophils %		72	74	78
% Bands		(bands 8.4%)	Bands 9%	(bands11%)
Lympocytes %				
Monocytes %				
Eosinophil %				1.2%
Basophils %				.9%
Sodium	135-145 mEq/L	135	138	147
Potassium	3.5-5 mEq/L	3.8	4.0	4.2
Chloride	95-110 mEq/L	101	106	109
Carbon Dioxide	24-32 mEq/L	25	26	24
HCO3-	20-28 mEq/L	27		
Urea Nitrogen (BUN)	8-22 mg/dl	8	19	30
Creatinine	0.44-1.4 mg/dl	1.3	1.6	1.7
Troponin T	< 19ng/L	17		
INR	0.9-1.2			2.3
Glucose	70-110 mg/dl	99	101	89
Lactate	<2	3.3	4.2	
UA and culture		pending	cloudy	

PT NAME: Mike Jones
DOB: 4/25/1943
MR # 9105701

INTAKE and OUTPUT

24hr Summary	INTAKE	OUTPUT
ER	IV:2240 PO: 100 Total: 2340	270
Day 1	IV: 3100 PO: 420 Total: 3520	790
Day 2	IV: 2440 PO: 600 Total: 3040	855
Day 3	IV: 4010 PO: 240 Total: 4250	2340

VS Trends

	ED	Day 2, 3 trends	ICU
Weight	73 kg	74.1 kg	75.8 kg
Height	5'9"		
HR	90	95 – 115	110
BP	145/82	155 – 165/80 – 90	110/50
Temp	36.4 c	36.0 – 37.8 c	37.0 c
Resp	20	20 – 30	18
O2 sat	93 RA	90 – 97 2 – 4 L nc	96 2 L nc
Pain	7/10 low back ache with occasional burning and stabbing pain. Worsened standing	6 – 10/10 low back constant ache and discomfort. TLSO helps, but U/A to get OOB with PT.	4/10 low back constant ache with burning

PT NAME: Mike Jones
DOB: 4/25/1943
MR # 9105701

Admission Orders

DX: Sepsis
Allergies: Penicillin
Code Status: Full Code
Admit to ortho unit
Diet: Low Na, Low fat, Cardiac Diet
Activity: OOB with assist TLSO Brace on at all times while out of bed
SCDs bilateral lower extremities while in bed
Oxygen titrate to keep O2 sat >92%
PT consult

IV: NS 1000mL at 150mL/hour x 2000mL; then 100mL/hr

PT/INR, CBC, C7 in 3 days
SCHEDULED Medications:
- Protonix 40mg PO daily
- Coumadin 5mg PO daily
- Lisinopril 5mg PO BID
- Levothyroxine 1.25 mg once daily
- Albuterol 2 puffs MDI q 6hr prn

PRN Medications
-Norco 5/325 mg tablet every 4 hours prn pain
-Tylenol 650mg PO Q6Hr PRN temp>102
-Zofran 4mg IV every 4 hrs PRN Nausea
-Lactulose 20 grams/30 ml PO PRN daily

PT NAME: Mike Jones
DOB: 4/25/1943
MR # 9105701

Day 3 Orders

U/A with C&S, Lactate now

Lactated Ringers 30 ml/kg over 60 minutes, then 150 ml/hr x 24 hours

Transfer to ICU

-Vancomycin 1gm every 12 hrs; no loading dose, run over 1 hr; pharmacy to monitor trough levels and creatinine and adjust dose.

Labs: CBC, CMP

Vancomycin trough prior to third dose; pharmacy to determine time

Day 4 Orders (Current)

Labs: CBC, CMP

Sputum Culture

Portable chest xray

Normal Saline 75 ml/hr

PT evaluation this AM

PT NAME: Mike Jones
DOB: 4/25/1943
MR # 9105701

Medication Administration Record (MAR)

Current 24 hr. **Red Times Medications Due:**

Blue Times indicate when medications were given

Scheduled Medication	Time-Days	Time-Nocs
Levothyroxine 1.25 mg po daily	**0700**	`
Protonix 40mg po daily	**0900**	
Vancomycin 1gm IV q 12hr infuse over 1 hr	**0900**	**2100**
Colace 100mg po BID	**0900**	**2100**
Lisinopril 5 mg PO BID	**0900**	**2100**
Coumadin 5 mg po daily		**2100**
IV Fluid: NS at 100mL/hr	0400	
PRN Medications		
Norco 5/325 5mg tab PRN every 4 hours pain		
Tylenol 650mg po Q6Hr PRN temp>102		
Zofran 4 mg IV Q6Hr PRN Nausea/Vomiting		
Lactulose 20 grams/30ml PO PRN constipation		

Previous 24 hours Blue Times indicate when medications were given

Scheduled Medication	Time-Days	Time-Nocs
Levothyroxine 1.25 mg	0700	
Vancomycin 1gm IV q 12hr infuse over 1 hr	0900	2100
Protonix 40mg po daily	0900	
Colace 100mg po BID	0900	2100
Coumadin 5mg po		1700
IV Fluid: NS at 100mL/h-Bag changed at listed times:	0800; 1800	0400
PRN Medications		
Norco 5/325 5mg tab PRN every 4 hours pain	1500 ; Pain 4/10	2100
Tylenol 650mg po Q6Hr PRN temp>38		
Lactulose		2100