



Anaphylactic Reaction to Blood Administration

Simulated Clinical Experience (SCE™) Overview

Scenario File Name: Anaphylactic Reaction

Overlay on: Standard Man

Location: Medical-Surgical Unit

Synopsis:

This simulated clinical experience was designed to expose the learner to the patient who experiences an adverse reaction to a blood transfusion. The patient is first day postoperative gynecological surgery who develops the complication of hypovolemia that requires a blood transfusion. The simulated clinical experience will automatically progress to anaphylaxis and subsequent shock states without prompt recognition of the transfusion reaction. With prompt recognition and intervention, the patient stabilizes. The anaphylactic component of this simulated clinical experience may be used separately depending on learning objectives and may be overlaid on any patient or other scenario. This simulated clinical experience is intended for the learner in Semester II.

History/Information:

A recently divorced, 46-year-old female was admitted to the hospital yesterday morning for a total abdominal hysterectomy with bilateral salpingo-oophorectomy due to multiple large uterine fibroids. Over the past two years, she had increasing pain that was not relieved with medication, excessively large menstrual flow and long-standing anemia refractory to standard treatment. Despite earlier recommendations from her healthcare provider to seek surgical intervention, she elected to wait due to multiple personal issues including her recent divorce and having two teenage children at home. During this time of postponing the surgery, she required two outpatient blood transfusions due to the severe anemia. Her significant preoperative lab values included a hemoglobin of 8.4 and a hematocrit of 32%. The morning of admission, her vital signs were a heart rate of 78, blood pressure of 110/70, respiratory rate of 16 and a temperature of 37°C. Her blood type is A negative. Intraoperatively, her estimated blood loss was 450mL. Her postoperative period has been uneventful, and you are the nurse assigned to her care the following morning. The night nurse reports the patient slept for the early part of the shift but has been awake complaining of discomfort since 0430 hours. Her last vital signs, taken at that time, were a heart rate of 88, blood pressure of 102/60, respiratory rate of 18 and a temperature of 37.4°C.

Healthcare Provider's Orders:

NPO until passing flatus then begin clear liquid diet and advance as tolerated
Vital signs every 4 hours; Out of bed to chair evening of surgery and then ambulate 3 times per day
Urinary catheter to bedside drainage; Discontinue morning of postoperative day one
Intake and Output every shift; IV of D5LR with KCl 20mEq per liter at 125mL/hour
AM Labs: Hemoglobin and Hematocrit, Electrolytes, BUN, Creatinine, Glucose
Oxygen to maintain SpO₂ greater than 92%; Incentive Spirometer every hour while awake
Sequential compression devices (SCD) on while in bed
Incentive spirometer every hour while awake
Morphine PCA: 2mg/10min with 4 hour lockout of 40mg or IVP Morphine 2-4mg every 2 hours prn pain
Ondansetron 4mg IVP every 8 hours prn nausea
Ketorolac 30mg IVP every 6 hours for 3 days
Ferrous Sulphate 325mg PO twice a day with meals; Begin when oral intake resumes
Docusate Sodium 100mg PO daily; Milk of Magnesia 30mL PO daily prn constipation

Learning Objectives/Questions/NCLEX-RN Test Plan

1. Differentiates between, discusses the implications for and describes the differences in the nursing management for the various types of blood and blood products (COMPREHENSION).
2. Formulates a nursing plan of care for a patient receiving blood or blood products (ANALYSIS).
3. Prioritizes the implementation and approach to the nursing management of a patient receiving blood or blood products (ANALYSIS).
4. Evaluates the patient's response to interventions and modifies the nursing care as appropriate for the patient experiencing an adverse reaction to blood administration (EVALUATION).

Questions to Prepare for the Simulated Clinical Experience:

1. Discuss the nursing management of the postoperative patient who has undergone a total abdominal hysterectomy with bilateral salpingo-oophorectomy.
2. Identify the potential complications nursing care is designed to prevent after this surgery. Include a discussion of the nursing and collaborative approach to their treatment should they occur.
3. Identify the indications for use for each of the following blood products and any special nursing considerations: Packed RBC, Whole Blood, Platelets, WBC, Fresh Frozen Plasma (FFP), Albumin and Platelets.
4. Discuss the standard of nursing care when transfusing any blood product.
5. What assessment data does the nurse need to collect to identify an adverse reaction when transfusing any blood product?
6. What are the various types of blood reactions, the accompanying symptomatology, potential short and long term complications and treatment?
7. Describe the pathophysiology of anaphylaxis.
8. What is the protocol for the treatment of anaphylaxis?

NCLEX-RN Test Plan:

- Safe and Effective Care Environment**
 - Management of Care
 - Safety and Infection Control
- Health Promotion and Maintenance**
- Psychosocial Integrity**
- Physiological Integrity**
 - Basic Care and Comfort
 - Pharmacological and Parental Therapies
 - Reduction of Risk Potential
 - Physiological Adaptations

Suggested Equipment and Supplies

IV Supplies		Genitourinary Supplies	
20ga IV catheter	1	14 Fr urinary catheter	1
18ga IV catheter	1	Sterile water 1000mL with 2mL yellow food coloring for urine source	1
Transparent dressing	1	Dressing Supplies	
Sterile water 1000mL (label D5LR with 20mEq KCl, 0.9% NS, LR, D5W)	1 each	4x9 dressing	1
Sterile water 250mL (label packed red blood cells)	2	Miscellaneous	
Y-type blood administration set	1	Patient ID band	1
IV pump (optional)	1	Female wig	1
PCA pump and tubing(Optional)	1	Bra with simulated breasts	1
Sterile water 250mL (label morphine 1mg/mL)	1	Red, blue, and yellow food coloring	1
Medication Supplies		Blood bank label	2
Sterile water(label diphenhydramine 10 or 50 mg/ml)	1	Stethoscope	1
Sterile water vial (label ondansetron 4mg/2mL)	1	BP cuff adapted for use with simulator	1
Sterile water vial (label ketorolac 30mg/mL)	1	Sharps container	1
Sterile water vial (label diphenhydramine 50mg/ml)	1	Non-sterile gloves	1 box
Cartridge syringe (label epinephrine 1:1000 1mg/mL)	1	Anti-embolism hose or sequential compression devices	1
Powder vial (label methylpredisolone 125 mg/ reconstitute with 2 ml)	1	Patient chart with appropriate forms and order sheets	1
Oxygen Supplies		Perineal pad	1
Oxygen flowmeter	1	Video camera and tapes (if recording)	1
Oxygen source	1	Monitors Required	
Nasal cannula, face mask, non-rebreather mask	1 each	SpO ₂	
Incentive spirometer	1	Temperature	
		Cardiac monitor with crash cart setup (optional)	

Simulator Setup/Notes

- Simulator should be dressed in a hospital gown with a wig.
- Place a bra with simulated breasts on the simulator. Individual breast exam models may be used inside bra or socks.
- Place a 20 gauge IV in the right forearm prior to start of simulation.
- Have several types of IV solutions available for learners to choose from, even though some may be inappropriate for administration with blood.
- Simulated packed red blood cells may be made by adding red and blue food coloring to achieve the desired color. Obtain a label from a local blood bank. Examples are also available on the Internet.
- Obtain blood bank forms from your local hospital for use with simulation.
- Patient identification per local standard. Hint: To challenge the learner to follow the appropriate nursing standard of care in double-checking patient identification prior to transfusion, leave the identification bracelet(s) off prior to starting the simulation.
- If a PCA pump is not available, simulate morphine by labeling a vial of sterile water morphine sulfate 1mg/mL.
- 14 Fr urinary catheter to bedside drainage should be placed in the simulator prior to starting the simulation with approximately 100mL of clear yellow urine in the bag.
- Simulated urine (yellow food coloring should be added to a liter of sterile water to achieve the desired color). This should be connected to your simulator's GU source.
- Abdominal dressing saturated with a small amount of theatrical blood or red food coloring should be placed on the simulator after allowed to dry. Circle an amount of the drainage to indicate prior check.
- Place incentive spirometer out of reach of the patient at the beginning of the simulation.
- Perineal pad with a scant amount of theatrical blood or red food coloring should be placed on the simulator after allowed to dry.
- Have the learners role-play inter-professional communication by reporting the patient's response to interventions. If the data presented is unorganized or missing vital components, have the healthcare provider become inappropriate in response. Emphasize the importance of data organization and completeness when communicating.
- Role-play intra-professional communication by having the learner call report to the admitting or transferring unit or have the learner give report to the next shift.
- Do not provide lab results to learners until they request them. A stat order for lab could be ordered to include a phlebotomy skill.
- Learner is expected to integrate content from sciences, humanities and previous nursing courses when preparing for and participating in simulation activities.

References

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Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
<p>State #1: Initial Assessment at 0800 Hours</p> <p>INSTRUCTOR NOTE: Open Oxygen Treatment Scenario and choose 2 Liters</p>	<p>HR=100; BP=93/49; RR=19; SpO₂=92% with O₂ at 2LPM; Breath Sounds=Clear bilaterally; Alert; Pupils equal; Bowel Sounds=Hypoactive; Urine Output= 50mL/hour; Clear yellow urine; Temp=37.6°C; All pulses present and equal bilaterally; IV site in right forearm dry, intact and without redness or swelling; Dry and intact abdominal dressing with a small amount of previously noted serosanguinous drainage; Perineal pad in place with scant sanguinous drainage</p> <p><i>Tell learners when they inquire:</i> Weight=70Kg; Skin warm, dry, pale pink; Pupils reactive to light; Oriented to day, time and place; Abdomen soft; Homan's sign negative bilaterally; Restless; No peripheral edema; Complains of increasing abdominal incisional pain</p> <p><i>When learner requests lab results:</i> CBC: Hgb 7.8, Hct 25% Chemistry: Na 137, K 4.0, Cl 104, CO₂ 24, Glucose 90, BUN 18, Creatinine 1.1</p>	<ul style="list-style-type: none"> • Performs physical assessment on 46-year-old female • Monitors pulse oximetry • Evaluates vital signs and explains abnormal • Evaluates pain and documents appropriately • Requests laboratory values • Identifies abnormalities in assessment and reports those abnormalities to the healthcare provider • Insures accuracy of IV fluid rate and delivery • Identifies potential medical orders or nursing measures that may be appropriate, i.e. blood transfusion and increased fluids • Communicates effectively with patient 	<p>What changes in this patient's condition should the nurse be concerned about? Why?</p> <ul style="list-style-type: none"> • Restlessness • Increasing abdominal incision pain • Increased RR and HR • Decreased BP • Decreased Hgb and Hct • Signs and symptoms of hypovolemia and worsening condition <p>What would explain the changes in this patient's condition?</p> <ul style="list-style-type: none"> • Blood loss • Hypovolemia <p>What would the nurse anticipate the surgeon ordering to address these changes?</p> <ul style="list-style-type: none"> • Blood transfusion • Fluids <p>Explain why the surgeon has ordered supplemental oxygen for this patient.</p> <ul style="list-style-type: none"> • Hgb 7.8 • Diminished oxygen carrying capacity <p>What are potential postoperative complications nursing care is designed to prevent?</p> <ul style="list-style-type: none"> • Atelectasis • Hemorrhage • Infection <p>Why has the healthcare provider ordered this specific solution and rate?</p> <ul style="list-style-type: none"> • Replaces extracellular deficits from surgical blood loss • Provides modest calories and supplemental potassium • Rate is 125mL/hour because patient is still NPO <p>What are possible explanations for the drop in this patient's hemoglobin and hematocrit?</p> <ul style="list-style-type: none"> • Internal hemorrhage • Dilutional
<p>Surgeon's Orders: PRBCs two units NOW</p>			
		<ul style="list-style-type: none"> • On receipt of order, institutes protocol to obtain PRBC • Prepares PRBC per standard of care • Identifies and prioritizes teaching need related to blood transfusion 	

Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
<p>State #2: Blood Started at 1000 Hours</p> <p>INSTRUCTOR NOTES: When the learner begins the blood transfusion, open Fluids Treatment Scenario and choose 250mL PRBC</p> <p>There is no change in the patient's vital signs or symptoms 15 minutes into the transfusion</p>	<p>HR=107; BP=88/49; RR=18; SpO₂=92% with O₂ at 2LPM; Breath Sounds=Clear bilaterally; Alert; Pupils equal; Urine Output=50mL/hour of clear, yellow urine; Temp=37.6°C</p> <p><i>Tell learners when they inquire:</i> Pupils reactive to light; Oriented to day, time and place; Restless; Continues to complain of abdominal pain</p>	<ul style="list-style-type: none"> • Repeats assessments, evaluates data and documents findings • Identifies changes in the patient's condition • Determines that second IV access is needed, selects appropriate gauged catheter, and using aseptic technique begins line • Obtains PRBC from blood bank per protocol • Prepares PRBC for transfusion using appropriate equipment and IV solution • Obtains baseline vital signs and documents on correct form • Begins transfusion per standard of care • Reassesses vital signs 15 minutes into the transfusion • Increases rate 15 minutes into the transfusion based on assessment 	<p>What risk factors may predispose this patient to an adverse reaction to the blood transfusion?</p> <ul style="list-style-type: none"> • <i>Prior blood transfusions</i> • <i>History of IgA sensitivity</i> • <i>History of ischemia related to cardiac or cerebral disease</i> <p>What are the different types of transfusion reactions?</p> <ul style="list-style-type: none"> • <i>Hemolytic</i> • <i>Non-Hemolytic Febrile</i> • <i>Anaphylactic</i> • <i>Mild Allergic</i> <p>Why is a second IV site indicated?</p> <ul style="list-style-type: none"> • <i>No medications or IV solutions may be added or infused through tubing with blood components except 0.9% NS</i> • <i>Patient receiving IV fluids with dextrose and potassium, also receiving morphine and ketorolac IV</i> <p>Why is the IV catheter size a consideration with blood product administration?</p> <ul style="list-style-type: none"> • <i>Larger gauge catheters encourage the flow of blood</i> • <i>Blood cells are large, and packed red cells are more viscous</i> <p>What would be the nurse's response if unable to obtain a secondary access for IV administration?</p> <ul style="list-style-type: none"> • <i>Disconnect D5LR with KCl and flush the IV with 0.9% NS</i> • <i>Hang the PRBC with the NS</i> • <i>Notify healthcare provider of inability to start second IV for fluids</i> <p>What type of IV solution may be used with blood and blood product administration? Why?</p> <ul style="list-style-type: none"> • <i>Normal saline only</i> • <i>Dextrose solutions induce red cell aggregation</i> • <i>Lactated Ringers and other solutions containing calcium are also incompatible</i>

Scenario States

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			<p>Discuss the standard of care related to blood and blood product administration including type of IV tubing, use of IV pumps or pressure bags and time period for administration.</p> <ul style="list-style-type: none"> • <i>Explain procedure</i> • <i>Obtain signed consent</i> • <i>Record baseline vital signs</i> • <i>Obtain blood within 30 minutes of transfusion start time</i> • <i>Check expiration date</i> • <i>Check blood for abnormal color, clumping, gas bubbles or extraneous materials</i> • <i>Return outdated or abnormal blood</i> • <i>Compare name and unit number with patient's ID band against the blood label</i> • <i>Check ABO grouping and Rh compatibility with label against ID band</i> • <i>Comparisons done at bedside with second licensed professional</i> • <i>Don gown, gloves and face shield</i> • <i>Prime Y-type blood tubing with NS, attach blood and connect to IV catheter</i> • <i>Clamp saline and open blood</i> • <i>Rate no greater than 5mL/minute for first 15 minutes</i> • <i>Remain with patient and observe for signs of reaction</i> • <i>If none, increase rate as ordered</i> • <i>Blood should remain at room temperature no longer than four hours</i> • <i>IV pumps: newer pumps may be used to administer blood</i> • <i>Pressure bags: for rapid replacement, excessive pressure may lead to broken blood vessels and extravasation</i> • <i>Hemolysis of red blood cells may occur with increased pressure</i>

Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
<p>State #3: Beginning Anaphylaxis 30 Minutes Later</p> <p>INSTRUCTOR NOTES: When learner administers epinephrine, open Medications Treatment Scenario and choose dose given</p> <p>When IV fluids given, open Fluids Treatment Scenario and choose 200mL Crystalloids</p> <p>When learner applies oxygen, open Oxygen Treatment Scenario and choose appropriate liter flow</p> <p><i>Automatic Transitions:</i> If epinephrine is given go to Epinephrine Administered</p> <p>If time in state is greater than 5 minutes go to Mild Anaphylaxis</p>	<p>HR=119; BP=82/52; RR=25; SpO₂=90% with O₂ at 2LPM; Breath Sounds=Clear bilaterally; Alert; Temp=38.6°C</p> <p><i>Tell learners when they inquire:</i> Oriented to day, time and place; Restlessness increases; Patient complains of chills, dyspnea, tightness in chest and abdominal pain</p>	<ul style="list-style-type: none"> • Reassesses, interprets findings and documents • Monitors the vital signs, pulse oximeter and symptoms • Identifies changes in the patient's condition • Increases oxygen delivery to 4 LPM per nasal cannula • Immediately stops transfusion and begins 0.9% saline infusion with new IV tubing • Calls healthcare provider STAT of change in condition • Calls blood bank of potential reaction and protocol • Communicates appropriately with patient that is dyspneic • Does not leave patient alone • Documents all findings appropriately on the correct forms 	<p>What data suggests an adverse blood reaction?</p> <ul style="list-style-type: none"> • Temp elevation greater than 1°C • Hypotension • Tachycardia • Tachypnea • Dyspnea • Chills • Tightness in chest • Abdominal pain • Increasing restlessness • Oozing from IV site or puncture areas • Hematuria • Flushing • Urticaria <p>Why is the nurse's first response to immediately stop the transfusion?</p> <ul style="list-style-type: none"> • Prevents additional exposure to offending antigen or infectious agent <p>What are the priorities in managing this patient's symptoms?</p> <ul style="list-style-type: none"> • Epinephrine 0.3-0.5mL 1:1000 IM in the anterior lateral muscle site (upper thigh) every 5-15 minutes until resolution of anaphylaxis or signs of hyperadrenalism (hypertension, volume expansion, hyperglycemia) • Maintain adequate airway and be prepared for endotracheal intubation • Give supplemental oxygen to keep SpO₂ greater than 92% with non-rebreather mask • Treat hypotension with crystalloid • Position in a supine position with lower extremities elevated unless precluded by shortness of breath or vomiting • Vasopressors for severe hypotension unresponsive to fluids • Diphenhydramine 25-50 mg IV not to exceed 400 mg/day to assist with potential allergic response of mast cells • Methylprednisolone 100-250 mg IV every 2-6 hours or 30 mg/Kg to stabilize the inflammatory response and prevent a protracted or biphasic reaction

Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
			<p>What is the rationale behind infusing a crystalloid solution?</p> <ul style="list-style-type: none"> • <i>Fluid replacement for massive vasodilation</i> • <i>Increases renal blood flow to prevent development of acute tubular necrosis</i> <p>How would the nurse intervene to decrease the patient's anxiety?</p> <ul style="list-style-type: none"> • <i>Make patient as comfortable as possible</i> • <i>Provide reassurance as needed</i> • <i>Calm approach by the nurse</i> <p>Should this patient require a future transfusion, what precautions would be taken?</p> <ul style="list-style-type: none"> • <i>Notify blood bank of previous reaction</i> • <i>Possibly pre-medicate with acetaminophen and diphenhydramine</i> • <i>Keep emergency supplies nearby</i> <p>What should patient teaching include?</p> <ul style="list-style-type: none"> • <i>Medical alert bracelet</i> • <i>Direct relationship between number of transfusions received and number of circulating antibodies thus increasing the likelihood of a future transfusion reaction</i> • <i>Possible need for pre-medication</i> • <i>Possibility of autologous transfusions</i>
<p>Surgeon's Orders: 0.9% NS at 200mL/hour Epinephrine 1:1000 0.5mg IM Bilirubin, LDH, Haptoglobin, and Urinalysis for Hemoglobinuria</p>			
		<ul style="list-style-type: none"> • Notifies lab of orders and states how to obtain specimens • Insures accuracy of IV fluid and rate change • Ensures crash cart is at the bedside • Attaches patient to cardiac monitor 	<p>What is the rationale for the ordered lab work?</p> <ul style="list-style-type: none"> • <i>Bilirubin: RBC breakdown leads to heme converted to bilirubin</i> • <i>Haptoglobin: assesses rate at which RBCs are being destroyed; Hgb released with hemolysis</i> • <i>Hemoglobinuria: Free unbound Hgb in urine</i> <p>Why did the surgeon increase the IV rate?</p> <ul style="list-style-type: none"> • <i>For volume replacement due to massive vasodilation, peripheral pooling and relative hypovolemia</i>

Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
<p>State #4: Mild Anaphylaxis</p> <p>INSTRUCTOR NOTES: When the learner administers epinephrine, open Medications Treatment Scenario and choose dose given</p> <p>When IV fluids given, open Fluids Treatment Scenario and choose 200mL Crystalloids</p> <p>When learner increases oxygen, open Oxygen Treatment Scenario and choose appropriate liter flow</p> <p><i>Automatic Transitions:</i> If epinephrine is given, go to Epinephrine Administered</p> <p>If time in state is greater than one minute, go to Worsening Anaphylaxis</p>	<p>HR=127; BP=84/54; RR=27; SpO₂=90% with O₂ at 4LPM; Breath Sounds=Wheezing bilaterally; Alert; Tongue semi-swollen; Temp=38.6°C</p> <p><i>Tell learners when they inquire:</i> Oriented to day, time and place; Restlessness increases; Complains of chills, dyspnea and tightness in the chest</p>	<ul style="list-style-type: none"> • Reassess, interpret findings and documents • Monitors vital signs, pulse oximetry, cardiac monitor and symptoms • Applies oxygen per non-rebreather mask at 10-15 LPM • Medicates patient demonstrating the Six Rights • Administers epinephrine as ordered • Administers diphenhydramine and corticosteroid as ordered • Communicates appropriately with dyspneic patient • Does not leave the patient alone 	

Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
<p>State #5: Worsening Anaphylaxis</p> <p>INSTRUCTOR NOTES: When learner administers epinephrine, open Medications Treatment Scenario and choose dose given</p> <p>When IV fluids given, open Fluids Treatment Scenario and choose 200mL Crystalloids</p> <p>When learner increases oxygen, open Oxygen Treatment Scenario and choose appropriate liter flow</p> <p><i>Automatic Transitions:</i> If epinephrine is given, go to Epinephrine Administered</p> <p>If time in state is greater than one minute, go to Severe Anaphylaxis</p>	<p>HR=132; BP=73/48 RR=30; SpO₂=92% with O₂ at 10LPM; Breath Sounds=Wheezing; Alert; Tongue swollen; Temp=38.6°C</p> <p><i>Tell learners when they inquire:</i> Oriented to day, time and place; New complaint of hoarseness and nausea; Restlessness increasing</p>	<ul style="list-style-type: none"> • Reassess, interpret findings and documents • Monitors vital signs, pulse oximetry, cardiac monitor and symptoms • Applies oxygen per non-rebreather mask at 10-15 LPM • Medicates patient demonstrating the Six Rights • Administers epinephrine as ordered • Administers diphenhydramine and corticosteroid as ordered • Communicates appropriately with dyspneic patient • Does not leave the patient alone 	

Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
<p>State #6: Severe Anaphylaxis</p> <p>INSTRUCTOR NOTES: When learner administers epinephrine, open Medications Treatment Scenario and choose dose given</p> <p>When IV fluids given, open Fluids Treatment Scenario and choose 200mL Crystalloids</p> <p>When learner increases oxygen, open Oxygen Treatment Scenario and choose appropriate liter flow</p> <p><i>Automatic Transitions:</i> If epinephrine is given, go to Epinephrine Administered</p>	<p>HR=142; BP=72/50; RR=28; SpO₂=91% with O₂ at 10LPM; Breath Sounds=Wheezing bilaterally; Alert; Pupils equal; Temp=38.6°C</p> <p><i>Tell learners when they inquire:</i> Pupils reactive to light; Oriented to day, time and place; Extremely anxious; Complains of sense of impending doom (angor animi)</p>	<ul style="list-style-type: none"> • Reassess, interpret findings and documents • Monitors vital signs, pulse oximetry, cardiac monitor and symptoms • Applies oxygen per non-rebreather mask at 10-15 LPM • Medicates patient demonstrating the Six Rights • Administers epinephrine as ordered • Administers diphenhydramine and corticosteroid as ordered • Communicates appropriately with dyspneic patient • Does not leave the patient alone 	

Scenario States

State	Events	Minimal Behaviors Expected	Prompts, Questions and Teaching Points
<p>State #7: Epinephrine Administered</p> <p>INSTRUCTOR NOTES: When learner administers epinephrine, open Medications Treatment Scenario and choose dose given</p> <p>When IV fluids given, open Fluids Treatment Scenario and choose 200mL Crystalloids</p> <p><i>Automatic Transitions:</i> If time in state is greater than 2 minutes, go to Complete Recovery</p>	<p>HR=180; BP=130/93; RR=23; SpO₂=94% with O₂ at 10LPM and increasing; Breath Sounds=Clear bilaterally; Alert; Pupils equal; Tongue non-swollen; Temp=38.6°C</p> <p><i>Tell learners when they inquire:</i> Pupils reactive to light; Oriented to day, time and place; Anxious</p>	<ul style="list-style-type: none"> • Reassesses, interprets findings and documents • Monitors vital signs, pulse oximeter, cardiac monitor and symptoms • Identifies changes in the patient's condition • Anticipates and monitors for side effects of the medication • Communicates effectively with patient 	
<p>State #8: Complete Recovery</p>	<p>HR=92; BP=120/62; RR=22; SpO₂=100% with O₂ at 10LPM; Breath Sounds=Clear bilaterally; Alert; Pupils equal; Tongue non-swollen; Temp=38.6°C</p> <p><i>Tell learners when they inquire:</i> Pupils reactive to light; Oriented to day, time and place; Anxious</p>	<ul style="list-style-type: none"> • Reassesses, interprets findings and documents • Monitors vital signs, pulse oximeter, cardiac monitor and symptoms • Identifies changes in the patient's condition • Anticipates and monitors for side effects of the medication • Communicates effectively with patient 	<p>What is the therapeutic effect of epinephrine in the treatment of anaphylaxis?</p> <ul style="list-style-type: none"> • <i>Increases peripheral vascular resistance</i> • <i>Improves blood pressure and coronary perfusion</i> • <i>Reverses peripheral vasodilation</i> • <i>Decreases angioedema</i> • <i>Positive inotropic and chronotropic cardiac effects</i> • <i>Bronchodilation</i> • <i>Reduction of inflammatory mediators</i> <p>What is the rationale behind administering the epinephrine IM versus SQ or IV Push?</p> <ul style="list-style-type: none"> • <i>Current evidence supports IM route as relatively safe and associated with improved survival</i> • <i>Higher plasma concentration levels than SQ route</i> • <i>Striking difference in time of maximum plasma concentration levels (IM=8 minutes; SQ=34 minutes)</i> • <i>IV associated with induction of fatal cardiac arrhythmias and myocardial infarction</i> • <i>Major adverse effects when given too rapidly, inadequately diluted, or in excessive dose</i>