



Jillian Ferguson

Age: 46

Weight: 70 kg

Base: Norma L. Female

Overview

Synopsis

Recently divorced, 46-year-old Jillian Ferguson was admitted to the hospital yesterday morning for a total abdominal hysterectomy with bilateral salpingo-oophorectomy due to multiple large uterine fibroids. On her first postoperative day the patient develops the complication of hypovolemia that requires a blood transfusion.

This Simulated Clinical Experience (SCE) automatically progresses to anaphylaxis and subsequent shock states without prompt recognition of the transfusion reaction. With prompt recognition and intervention, the patient stabilizes.

This SCE consists of eight states that progress from onset of anaphylaxis which progresses from mild to severe. Automatic transitions are used in States 3, 4, 5 and 7 and are based on a programmed duration of time in each state. Manual transitions are used in States 1, 2 and 6. With manual transitions, facilitators should advance to the applicable state when appropriate interventions are performed.

In **State 1 Initial Assessment**, the patient demonstrates a HR in the 100s, BP in the 90s/40s, RR in the upper teens, SpO₂ in the low 90s on oxygen at 2 LPM via nasal cannula and a temperature of 37.6C. Her breath sounds are clear and bowel sounds are hypoactive. The patient's cardiac rhythm is sinus tachycardia. She has a dry and intact abdominal wound dressing with a small amount of previously noted serosanguinous drainage. There is minimal discharge on her perineal pad. The patient has a urinary catheter in place draining clear yellow urine at 50 mL/hour. An IV fluid infusion is present in her right forearm and the site is without redness or swelling. Peripheral pulses are equal and there is no peripheral edema. She is complaining of increasing abdominal incision pain. When the learners request the results of the morning labwork, the facilitator should provide the following report: *CBC: Hgb 7.8, Hct 25%; Chemistry: Na 137, K 4.0, Cl 104, Glucose 90, BUN 18, Creatinine 1.1*. The learners are expected to assess the patient, report abnormal vital signs and identify appropriate medical and nursing management of the patient. The learners should also demonstrate effective verbal and written communication skills with the healthcare provider and patient.

The healthcare provider orders 2 units of packed red blood cells (PRBCs) to be transfused. The learners are expected to recognize that a second IV access is needed and insert a second IV. Local protocols to obtain and prepare the PRBCs for administration should be instituted. Patient education related to the blood transfusion should be completed. Baseline vital signs should be assessed and documented. Once the learners prepare the blood for safe administration and obtain consent to transfuse, the scenario should be manually advanced to **State 2 Blood Started 2 Hours Later**.

Synopsis Continued

In **State 2 Blood Started 2 Hours Later**, the patient demonstrates a HR in the 110s, BP in the 80s/40s, RR in the upper teens, SpO₂ in the low 90s on oxygen at 2 LPM via nasal cannula and a temperature of 37.6C. Her breath sounds are clear and bowel sounds are hypoactive. The patient's cardiac rhythm is sinus tachycardia. The patient continues to be restless and complains of abdominal pain. The learners are expected to administer the blood per local protocol.

When the learners administer the transfusion, the facilitator should open the Intervention Option and choose Fluids: PRBC Infusion: 175 mL/hr.

After the learners have set up and commenced the blood transfusion, the scenario should be manually advanced to **State 3 Beginning Anaphylaxis**.

In **State 3 Beginning Anaphylaxis**, the patient demonstrates a HR in the 110s, BP in the 80s/50s, RR in the low 20s, SpO₂ in the low 90s on oxygen at 2 LPM via nasal cannula and a temperature of 38.6C. Her breath sounds are clear and bowel sounds are hypoactive. Her cardiac rhythm is sinus tachycardia. The patient begins to complain of mild dyspnea and chest tightness. The learners are expected to repeat a focused assessment and identify the change in the patient's condition.

When learners identify anaphylaxis and provide appropriate IV fluid interventions, the facilitator should open the Intervention Option and choose Fluids: PRBC Infusion: Stop and then choose Fluids: Crystalloids: 250 mL/hr.

When learners titrates the oxygen, the facilitator should open the Oxygen Intervention Option and choose Oxygen: Nasal Cannula 4 LPM.

If the learners notify the healthcare provider of the change in condition, receive orders and administer epinephrine, the scenario should be manually transitioned to **State 7 Epinephrine Administered**. If the learners do not administer epinephrine within five minutes, the scenario automatically transitions to **State 4 Mild Anaphylaxis**.

The vital signs in **State 7 Epinephrine Administered** have been programmed to reflect the patient's response to interventions. Therefore, the facilitator does not need to administer epinephrine in the software as the learners administer the medication at the bedside.

In **State 4 Mild Anaphylaxis**, the patient demonstrates a HR in the 120s, BP in the 80s/40s to 50s, RR in the high 20s, SpO₂ in the low 90s on oxygen at 4 LPM via nasal cannula and a temperature of 38.6C. Her breath sounds exhibit wheezing and her tongue has begun to swell. She complains of chills and abdominal pain and states that her dyspnea and chest tightness are getting worse. Her cardiac rhythm is sinus tachycardia. Her bowel sounds are hypoactive. The learners are expected to repeat a focused assessment and identify the change in the patient's condition.

When learners identify anaphylaxis and provide appropriate IV fluid interventions, the facilitator should open the Intervention Option and choose Fluids: PRBC Infusion: Stop and then choose Fluids: Crystalloids: 250 mL/hr.

Synopsis Continued

When learners titrate the oxygen, the facilitator should open the Oxygen Intervention Option and choose Oxygen: Non-Rebreather Mask 70% FiO₂.

If the learners notify the healthcare provider of the change in condition, receive orders and administer epinephrine, the scenario should be manually transitioned to **State 7 Epinephrine Administered**. If the learners do not administer epinephrine within 75 seconds, the scenario automatically transitions to **State 5 Worsening Anaphylaxis**.

The vital signs in **State 7 Epinephrine Administered** have been programmed to reflect the patient's response to interventions. Therefore, the facilitator does not need to administer epinephrine in the software as the learners administer the medication at the bedside.

In **State 5 Worsening Anaphylaxis**, the patient demonstrates a HR in the 130s, BP in the 70s/40s, RR in the high 20s, SpO₂ in the low to mid 90s on oxygen at 70% via non-rebreather facemask and a temperature of 38.6C. Her breath sounds are wheezing in all lobes, and her tongue is swollen. Her cardiac rhythm is sinus tachycardia. The patient complains of hoarseness and nausea and becomes more restless. Her bowel sounds are hypoactive. The learners are expected to repeat a focused assessment and identify the change in the patient's condition.

When learners identify anaphylaxis and provide appropriate IV fluid interventions, the facilitator should open the Intervention Option and choose Fluids: PRBC Infusion: Stop and then choose Fluids: Crystalloids: 250 mL/hr.

If the learners notify the healthcare provider of a change in the patient's condition, receive orders and administer epinephrine, the scenario should be manually transitioned to **State 7 Epinephrine Administered**. If the learners do not administer epinephrine within one minute, the scenario automatically transitions to **State 6 Severe Anaphylaxis**.

The vital signs in **State 7 Epinephrine Administered** have been programmed to reflect the patient's response to interventions. Therefore, the facilitator does not need to administer epinephrine in the software as the learners administer the medication at the bedside.

During **State 6 Severe Anaphylaxis**, the patient demonstrates a HR in the 140s BP in the 70s/40s, RR in the mid to high 20s, SpO₂ in the low 90s on oxygen at 70% via non-rebreather facemask and a temperature of 38.6C. Her breath sounds are wheezing in all lobes, and her tongue is swollen. Her cardiac rhythm is sinus tachycardia. The patient complains of impending doom and is extremely anxious. Her bowel sounds are hypoactive. The learners are expected to repeat a focused assessment and identify the change in the patient's condition.

When learners identify anaphylaxis and provide appropriate IV fluid interventions, the facilitator should open the Intervention Option and choose Fluids: PRBC Infusion: Stop and then choose Fluids: Crystalloids: 250 mL/hr.

Synopsis Continued

When the learners notify the healthcare provider of a change in condition, receive orders and administer epinephrine the scenario should be manually transitioned to **State 7 Epinephrine Administered**.

The vital signs in **State 7 Epinephrine Administered** have been programmed to reflect the patient's response to interventions. Therefore, the facilitator does not need to administer epinephrine in the software as the learners administer the medication at the bedside.

In **State 7 Epinephrine Administered**, the patient demonstrates a HR in the 150s, BP in the 120s to 130s/80s to 90s, RR in the low to mid 20s, SpO₂ in the high 90s on oxygen at 70% via non-rebreather facemask and a temperature of 38.6C. Her breath sounds are clear in all lobes, and her tongue is not swollen. Her cardiac rhythm is sinus tachycardia. The patient remains anxious. Her bowel sounds are hypoactive. The learners are expected to repeat a focused assessment and identify the change in the patient's condition. The learners should monitor the side effects of the medication given. The learners should remain with the patient and demonstrate effective communication.

After two minutes the scenario automatically transitions to **State 8 Complete Recovery**.

In **State 8 Complete Recovery**, the patient demonstrates a HR in the 90s to 100s, BP in the 120s/60s, RR in the low 20s, SpO₂ in the high 90s on oxygen at 70% via non-rebreather facemask and a temperature of 38.6C. Her breath sounds are clear in all lobes, and her tongue is not swollen. Her cardiac rhythm is sinus tachycardia. The patient remains anxious. Her bowel sounds are hypoactive. The learners are expected to repeat the assessment of the patient and identify the change in the patient's condition. The learners should monitor the side effects of the medication given. The learners should remain with the patient and demonstrate effective communication with the patient.

This SCE prepares the learner for the following items of the NCLEX-RN test format:

NCLEX-RN Test Plan:

X Safe and Effective Care Environment

- X Management of Care
- X Safety and Infection Control

X Health Promotion and Maintenance

X Psychosocial Integrity

X Physiological Integrity

- X Basic Care and Comfort
- X Pharmacological and Parenteral Therapies
- X Reduction of Risk Potential
- X Physiological Adaptations

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Background

Patient History

Past Medical History: Patient has a history of large uterine fibroids. Over the past two years, she had increasing pain that was not relieved with medication, an 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%

Allergies: No known allergies

Medications: Over-the-counter daily vitamins and iron supplements

Code Status: Full code

Social/Family History: Recently divorced with two teenage children at home

Handoff Report

The learner is expected to notify the healthcare provider of abnormal assessment findings where appropriate and necessary.

The report should follow the SBAR format and include:

Situation:

The patient is a recently divorced, 46-year-old female in her first day post-operative following a total abdominal hysterectomy with bilateral salpingo-oophorectomy due to multiple large uterine fibroids. She has an increased respiratory rate and low blood pressure.

Background:

Upon admission on the morning of her surgery, the patient demonstrated a HR of 78, BP of 110/70, RR of 16 and a temperature of 37C. Her blood type is A negative. Intraoperatively, her estimated blood loss was 450 mL. Her postoperative period has been uneventful so far. The patient slept well last night but has been awake complaining of discomfort for a few hours.

Assessment:

Vital Signs: HR 88, BP 102/60, RR 18, SpO₂ 92, Temp 37.4C

General Appearance: Restless

Cardiovascular: Sinus rhythm

Respiratory: Clear in all lobes. Nasal cannula in place with oxygen at 2 LPM

GI: Hypoactive bowel sounds. Abdomen soft. Complaining of increasing pain around incision. Abdominal dressing intact with small amount of previously noted serosanguinous drainage

Handoff Report Continued

GU: Urinary catheter in place. Urine output 50 mL/hour. Perineal pad in place with scant sanguinous drainage

Extremities: No edema. Full range of motion to extremities

Skin: Warm, dry and pale

Neurological: Alert and oriented to person, place and time. Pupils equal, round, reactive to light and accommodation. No neurological deficits

IVs: IV in the right forearm, patent and non-reddened. Dextrose 5% in Lactated Ringers with 20 mEq KCl/Liter infusing at 125 mL/hour

Labs: Drawn this morning, results pending

Pain: Has morphine patient-controlled analgesia (PCA) that she is using

Recommendations:

Perform routine assessment and obtain lab results

Orders

Initial Healthcare Provider's Orders:

Admit to Medical Surgical Unit

Diagnosis: Status post total abdominal hysterectomy with bilateral salpingo-oophorectomy

Full code

NPO until passing flatus, then begin clear liquid diet and advance as tolerated

Out of bed to chair evening of surgery and then ambulate 3 times per day

Vital signs every 4 hours

Notify healthcare provider for acute changes

Continuous pulse oximeter

Oxygen to maintain SpO₂ greater than 92%

IV of D5LR with KCl 20 mEq per liter at 125 mL/hour

Morphine PCA: 1 mg/mL concentration; 1 mg every 15 min with 4-hour lockout of 16 mg

Ondansetron 4 mg IV push every 8 hours prn nausea

Ketorolac 30 mg IV push every 6 hours for 3 days

Ferrous sulfate 325 mg PO twice a day with meals, begin when oral intake resumes

Docusate sodium 100 mg PO daily

Milk of Magnesia 30 mL PO daily prn constipation

Incentive spirometer every hour while awake

Sequential compression devices (SCD) on while in bed

Urinary catheter to bedside drainage, discontinue morning of postoperative day one

Intake and output every shift

AM labs: Hemoglobin and hematocrit, BUN and electrolytes, creatinine, glucose

Orders Continued

Orders Received in State 1:

Transfuse 2 units packed red blood cells (PRBC) per protocol
Decrease D5LR with KCl 20 mEq per liter to 30 mL/hr while blood is infusing

Transfusion Reaction Orders Received in State 3, 4, 5 or 6:

NS at 200 mL/hour
EPINEPHrine 1:1000 0.5 mg IM
Bilirubin, LDH, haptoglobin and urinalysis for hemoglobinuria
Administer diphenhydrAMINE 25 mg IV push
MethylPREDNISolone 100 mg IV push STAT

Preparation

Learning Objectives

- Differentiates between, discusses the implications for and describes the differences in the nursing management for the various types of blood and blood products (UNDERSTANDING)
- Formulates a nursing plan of care for a patient receiving blood or blood products (CREATING)
- Prioritizes the implementation and approach to the nursing management of a patient receiving blood or blood products (ANALYZING)
- Evaluates the patient's response to interventions and modifies the nursing care as appropriate for the patient experiencing an adverse reaction to blood administration (EVALUATING)
- Identifies and differentiates clinical manifestations of various blood transfusion reactions (APPLYING)

Recommended eDose modules for learners to complete before the SCE:

Medication Dosage Calculation Skills

- X Medication Orders & S. I. Units
- X Tablets & Capsules
 - Liquid Medicines
- X Injections
- X I.V. Infusions

Injectable Medicines Therapy

- X Slow I.V. Injections
- X Intermittent Infusions
 - Continuous Infusions

Pediatrics

This SCE addresses the following QSEN Competencies:

- X Patient-Centered Care
- X Teamwork and Collaboration
- X Evidence-Based Practice
 - Quality Improvement
- X Safety
 - Informatics

Learner Performance Measures

Essential Performance Measures for SCE:

- Reviews patient's medical record
- Performs hand hygiene before and after patient contact
- Demonstrates appropriate use of personal protective equipment
- Introduces self to patient
- Verifies patient identity with two identifiers
- Conducts basic environmental safety assessment and maintains safety measures
- Uses therapeutic communication to establish rapport and reduce patient anxiety
- Calculates and administers medications safely according to the Six Rights
- Provides developmentally appropriate education
- Evaluates effectiveness of communication
- Evaluates effectiveness of education
- Documents all findings, interventions and patient responses

State 1 Initial Assessment:

- Performs a complete physical assessment
- Monitors pulse oximetry
- Evaluates vital signs and explains abnormal findings
- Evaluates pain
- Ensures accuracy of IV fluid rate and delivery
- Requests laboratory values
- Discontinues urinary catheter
- Monitors output
- Reports abnormal assessment findings and lab results to the healthcare provider

Performance Measures after State 1 Orders Received:

- Determines that second IV access is needed, selects appropriate gauged catheter and begins line using aseptic technique
- Institutes protocol to obtain and prepare the PRBCs for administration
- Obtains baseline vital signs and documents on correct form
- Prioritizes teaching need related to blood transfusion
- Obtains consent for transfusion
- Prepares for PRBC transfusion using appropriate equipment and IV solution

State 2 Blood Started 2 Hours Later:

- Performs focused assessment
- Initiates transfusion of PRBCs per protocol
- Remains with patient after blood is started
- Reassesses vital signs every 5 minutes for the first 15 minutes of the transfusion (or per protocol)
- Documents appropriately on transfusion form

Learner Performance Measures Continued

State 3 Beginning Anaphylaxis:

- Performs focused assessment and evaluates findings
- Monitors vital signs, pulse oximetry, cardiac monitor 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% Sodium Chloride infusion with new IV tubing
- Calls healthcare provider STAT to notify of change in condition and clarifies verbal orders by reading them back to healthcare provider
- Notifies blood bank of potential reaction and reviews protocol
- Communicates appropriately with dyspneic patient
- Remains with patient

State 4 Mild Anaphylaxis:

- Performs focused assessment and evaluates findings
- Monitors vital signs, pulse oximetry, cardiac monitor and symptoms
- Identifies changes in the patient's condition
- Applies oxygen per non-rebreather mask at 10 to 15 LPM
- Immediately stops transfusion and begins 0.9% Sodium Chloride infusion with new IV tubing
- Calls healthcare provider STAT to notify of change in condition and clarifies verbal orders by reading them back to healthcare provider
- Notifies blood bank of potential reaction and reviews protocol
- Communicates appropriately with dyspneic patient
- Remains with patient

State 5 Worsening Anaphylaxis:

- Performs focused assessment and evaluates findings
- Monitors vital signs, pulse oximetry, cardiac monitor and symptoms
- Identifies changes in the patient's condition
- Immediately stops transfusion and begins 0.9% Sodium Chloride infusion with new IV tubing
- Calls healthcare provider STAT to notify of change in condition and clarifies verbal orders by reading them back to healthcare provider
- Notifies blood bank of potential reaction and reviews protocol
- Communicates appropriately with dyspneic patient
- Remains with patient

Learner Performance Measures Continued

State 6 Worsening Anaphylaxis:

- Performs focused assessment and evaluates findings
- Monitors vital signs, pulse oximetry, cardiac monitor and symptoms
- Identifies changes in the patient's condition
- Immediately stops transfusion and begins 0.9% Sodium Chloride infusion with new IV tubing
- Calls healthcare provider STAT to notify of change in condition and clarifies verbal orders by reading them back to healthcare provider
- Notifies blood bank of potential reaction and reviews protocol
- Communicates appropriately with dyspneic patient
- Remains with patient

Performance Measures after Transfusion Reaction Orders Received in State 3, State 4, State 5 or State 6:

- Notifies lab of orders and states how to obtain specimens
- Ensures accuracy of IV fluid and rate change
- Ensures crash cart is at the bedside
- Attaches patient to cardiac monitor
- Administers epinephrine, diphenhydramine and methylprednisolone safely using the Six Rights

State 7 Epinephrine Administered:

- Performs focused assessment and evaluates findings
- Monitors vital signs, pulse oximetry, cardiac monitor and symptoms
- Anticipates and monitors for side effects of epinephrine administration
- Identifies changes in the patient's condition

State 8 Complete Recovery:

- Performs focused assessment
- Monitors vital signs, pulse oximetry, cardiac monitor and symptoms
- Identifies improvement in the patient's condition
- Increases rate of primary IV fluids to 125 mL/hour

Preparation Questions

- Discuss the nursing management of the postoperative patient who has undergone a total abdominal hysterectomy with bilateral salpingo-oophorectomy.
- Identify priority nursing care to prevent potential complications following this type of surgery.
- Discuss treatment modalities for potential complications as identified above.
- Discuss the standard of nursing care when transfusing any blood product.
- Summarize the assessment data needed to detect an adverse blood transfusion reaction.
- Describe blood transfusion reactions including clinical manifestations, treatment, and potential short and long-term complications.
- Describe the pathophysiology of anaphylaxis.
- What is the protocol for the treatment of anaphylaxis?

Equipment and Supplies

IV Supplies

20 gauge IV catheter (2)

Transparent dressing (2)

Distilled water 1000 mL (4) labeled:

- Dextrose 5% in Lactated Ringers with 20 mEq KCl
- 0.9% Sodium Chloride
- Lactated Ringers
- Dextrose 5% in Water

Distilled water colored with red food coloring 250 mL (labeled Packed Red Blood Cells)(2)

Y-type blood administration set

IV tubing

IV pump (2)

Medication Supplies

PCA pump and tubing

Distilled water 50 mL (labeled Morphine 1 mg/mL)

Distilled water 2 mL vial (2) labeled:

- Ondansetron 4 mg/2mL
- Ketorolac 30 mg/mL

Distilled water 1 mL vial (labeled DiphenhydrAMINE 50 mg/mL)

Cartridge syringe (labeled EPINEPHrine 1:1000 1 mg/mL)

Powder vial (labeled MethylPREDNISolone 125 mg/reconstitute with 2 mL 0.9% Sodium Chloride to get a concentration of 125 mg/2 mL)

Distilled water 5 mL vial (labeled 0.9% Sodium Chloride)

Simulated oral medications labeled:

- Ferrous sulfate 30 mg
- Docusate sodium 100 mg
- Magnesium Hydroxide (360 mL bottle)

Oxygen, Airway and Ventilation Supplies

Oxygen flowmeter

Oxygen source

Nasal cannula

Non-rebreather mask

Incentive spirometer

Genitourinary Supplies

14 Fr urinary catheter

Distilled water 1000 mL for urine source

Dressing Supplies

4X9 Dressing

1 inch cloth tape (1 roll)

Equipment and Supplies Continued

Miscellaneous

- Patient chart with appropriate forms and order sheets
- Patient identification band
- Stethoscope
- BP cuff adapted for use with simulator
- Non-sterile gloves (1 box)
- Sharps container
- Audio and video recording devices
- Female wig
- Simulated breasts
- Red, blue, and yellow food coloring
- Blood bank label
- Sequential compression devices
- Perineal pad

Monitors Required

- ECG
- NIBP
- SpO₂

Notes

Facilitator Notes

This SCE was created with the patient Jillian Ferguson, and only this patient can be used. The physiological values documented indicate appropriate and timely interventions. Differences will be encountered when care is not appropriate or timely. The facilitator should not click “Run” until ready to start the SCE.

Learners should perform an appropriate physical exam. The facilitator or patient should verbalize the physical findings the learners are seeking but are not enabled by the simulator (such as pain on palpation). The facilitator should use the microphone and/or preprogrammed vocal or audio sounds to respond to the learners’ questions, if present on your simulator.

Where appropriate, do not provide information unless specifically asked by the learners. In addition, ancillary results (e.g., ECG, chest x-ray, labs) should not be provided until the learners request them.

If the patient becomes unconscious in the SCE, then speaking and vocalization should cease.

It is important to moulage the simulator to enhance the fidelity or realism of the SCE. For this patient:

- Dress the simulator in a hospital gown with identification band, simulated breasts and wig
- Provide several types of IV solutions 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
- 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 SCE
- Perineal pad with a scant amount of theatrical blood or red food coloring should be placed on the simulator after drying
- For simulators without the cyanosis feature, use a thin coating of mortician’s wax or petroleum jelly as a base, then apply moulage paints or ordinary cosmetics (e.g., blue eye shadow) to the lips and nail beds, as indicated.
- Prime the genitourinary system feature prior to the simulation. As the patient will have a urinary catheter already in place at the start of the SCE, leave the indwelling catheter in place to a drainage bag. Add one to three drops of yellow food coloring to the appropriate amount of distilled water, and prefill the drainage bag with 200 mL of urine to simulate urine that has already drained
- For simulators with permanent IV access ports (iStan), connect an IV bag of distilled water labeled as Dextrose 5% in Lactated Ringers with 20 mEq KCl to the port on the right arm of the simulator and set the fluid to infuse at 125 mL/hr. Dress the access port to simulate a peripheral IV. For simulators without permanent IV access ports (ECS/HPS), place an IV in the right arm of the simulator and connect to a 1000 mL bag of distilled water labeled as Dextrose 5% in Lactated Ringers with 20 mEq KCl. Set the fluid to infuse at 125 mL/hr

Facilitator Notes Continued

- When the learners identify the need for a second IV, have the learners begin fluids in the left arm for simulators with permanent IV access ports (iStan) or start another IV in the right arm for simulators without permanent IV access ports (ECS/HPS)

The patient in this SCE requires oxygen administration. For iStan and ECS, the facilitator should administer oxygen in the software as the learners apply oxygen to the simulator. For HPS, learners need to apply real oxygen as the simulator only responds to real oxygen administration.

Place a code cart either outside of the room or away from the patient area in the room to allow the secondary nurse to retrieve it and bring it to the bedside, if needed. Have either an automated external defibrillator or a defibrillator with the code cart.

When the learners initiate cardiac monitoring, the tracing and heart rate appear on a real ECG monitor. For facilities without ECG monitoring, have the learners apply ECG electrodes to the mannequin and attach the leads. Once all 3 or 5 leads are in place, reveal the TouchPro ECG tracing.

Simulation personnel should play the following roles:

- Healthcare provider
- Laboratory technician
- Offgoing nurse
- Blood bank personnel

Make a patient chart with the appropriate written order forms, MARs, diagnostic results, etc. for learners to utilize. The chart should include the specific patient identification information.

Begin the simulation with the offgoing medical-surgical nurse (simulation personnel) providing verbal handoff to the oncoming nurse (learner) using SBAR.

Have the learners role-play inter-professional communication by reporting the patient's response to interventions. If the data presented is disorganized or missing vital components, have the healthcare provider respond inappropriately. Emphasize the importance of data organization and completeness when communicating.

Role-play intra-professional communication by having the learners hand off to the admitting or transferring unit or have the learners hand off to the next shift.

Debriefing and instruction after the scenario are critical. Learners and facilitators may wish to view a video of the scenario afterward for instructional and debriefing purposes.

Debriefing Points

The facilitator should begin by introducing the process of debriefing:

- Introduction: Discuss faculty role as a facilitator, expectations, confidentiality, safe-discussion environment
- Personal Reactions: Allow learners to recognize and release emotions, explore student reactions
- Discussion of Events: Analyze what happened during the SCE, using video playback if available
- Summary: Review what went well and what did not, identify areas for improvement and evaluate the experience

Questions to be asked during debriefing:

- What was the experience like for you?
- What happened and why?
- What did you do and was it effective?
- Discuss your interventions (technical and non-technical). Were they performed appropriately and in a timely manner?
- How did you decide on your priorities for care and what would you change?
- How did patient safety concerns influence your care? What did you overlook?
- In what ways did you personalize your care for this patient and family members (recognition of culture, concerns, anxiety)?
- Discuss your teamwork. How did you communicate and collaborate? What worked, what didn't work and what will you do differently next time?
- What are you going to take away from this experience?

Teaching Q&A

State 1 Initial Assessment:

What changes in this patient's condition should concern the nurse? Why?

- *Restlessness*
- *Increasing abdominal incision pain*
- *Increased respiratory rate and heart rate*
- *Decreased blood pressure*
- *Decreased hemoglobin and hematocrit*
- *Signs and symptoms of hypovolemia and worsening condition*

What would explain the changes in this patient's condition?

- *Blood loss*
- *Hypovolemia*

What orders would the nurse anticipate receiving from the surgeon to address these changes?

- *Blood transfusion*
- *Fluids*

Explain why the surgeon has ordered supplemental oxygen for this patient.

- *Hgb 7.8*
- *Diminished oxygen-carrying capacity*
- *Low oxygen saturation levels*

What potential postoperative complications should the nursing care be able to prevent?

- *Atelectasis*
- *Hemorrhage*
- *Infection*

Why has the healthcare provider ordered this specific solution and rate?

- *Replaces extracellular deficits from surgical blood loss*
- *Provides modest calories and supplemental potassium*
- *Rate is 125 mL/hour because patient is still taking nothing by mouth*

What are possible explanations for the drop in this patient's hemoglobin and hematocrit?

- *Internal hemorrhage*
- *Dilution of blood with IV fluids*
- *Blood loss during surgery compounded the patient's long-standing anemia*

State 2 Blood Started 2 Hours Later:

What risk factors may predispose this patient to an adverse reaction to the blood transfusion?

- *Prior blood transfusions*
- *History of Immunoglobulin A sensitivity*

Teaching Q&A Continued

What are the different types of transfusion reactions?

- *Hemolytic*
- *Non-hemolytic febrile*
- *Anaphylactic*
- *Mild allergic*

Why is a second IV site indicated?

- *No medications or IV solutions may be added or infused through tubing with blood components except normal saline*
- *The patient is receiving IV fluids with dextrose and potassium and also receiving morphine*

Why is the IV catheter size a consideration with blood product administration?

- *Larger gauge catheters encourage the flow of blood*
- *Blood cells are large and packed red blood cells are more viscous*

What would be an appropriate response if the nurse is unable to obtain a secondary access for IV administration?

- *Disconnect dextrose 5% in lactated ringers with potassium chloride and flush the IV with 0.9% sodium chloride*
- *Hang the packed red blood cells with 0.9% sodium chloride*
- *Notify healthcare provider of inability to start second IV for fluids*

What type of IV solution may be used with blood and blood product administration? Why?

- *Only 0.9% sodium chloride*
- *Dextrose solutions induce red cell aggregation*
- *Lactated ringers and other solutions containing calcium are also incompatible*

Why is the rate of the primary IV fluid decreased when the blood is started?

- *To prevent fluid overload*

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.

- *Explain procedure*
- *Obtain signed consent*
- *Record baseline vital signs*
- *Begin blood transfusion within 30 minutes of obtaining blood*
- *Check expiration date*
- *Check blood for abnormal color, clumping, gas bubbles or extraneous materials*
- *Return outdated or abnormal blood*
- *Compare name and unit number with patient's identification (ID) band against the blood label*
- *Check ABO grouping and Rh compatibility with label against ID band*
- *Do comparisons at bedside with another licensed professional*
- *Don gown, gloves and face shield*

Teaching Q&A Continued

- Prime Y-type blood tubing with Normal Saline, attach blood and connect to IV catheter
- Clamp saline and open blood
- Begin rate no greater than 5 mL/minute for first 15 minutes
- Remain with patient and observe for signs of reaction
- Increase rate per protocol, if no reaction noted
- Transfusion must be completed within four hours
- Use IV pumps per protocol
- Use pressure bags for rapid replacement; however, excessive pressure may lead to broken blood vessels, extravasation and hemolysis of red blood cells

State 3 Beginning Anaphylaxis:

What data suggests an adverse blood reaction?

- Temperature elevation greater than 1C
- Hypotension
- Tachycardia
- Tachypnea
- Dyspnea
- Chills
- Tightness in chest
- Abdominal pain
- Increasing restlessness
- Oozing from IV site or puncture areas
- Hematuria
- Flushing
- Urticaria

Why is the nurse's first response to immediately stop the transfusion?

- Prevents additional exposure to offending antigen or infectious agent

What are the priorities in managing this patient's symptoms?

- Administer EPINEPHrine 0.3 to 0.5 mL 1:1000 intramuscular (IM) in the anterior lateral muscle site (upper thigh) every five to 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 infusion
- Position in a supine position with lower extremities elevated unless precluded by shortness of breath or vomiting
- Administer vasopressors for severe hypotension if unresponsive to fluids
- Administer diphenhydrAMINE 25 to 50 mg IV not to exceed 40 mg/day to assist with potential allergic response of mast cells
- Administer methylPREDNISolone 100 to 250 mg IV every 2 to 6 hours or 30 mg/kg to stabilize the inflammatory response and prevent a protracted or biphasic reaction

Teaching Q&A Continued

What is the rationale behind infusing a crystalloid solution?

- *Fluid replacement for massive vasodilation*
- *Increases renal blood flow to prevent development of acute tubular necrosis*

How would the nurse intervene to decrease the patient's anxiety?

- *Make patient as comfortable as possible*
- *Provide reassurance as needed*
- *Present a calm composure*

If this patient requires a future transfusion, what precautions would be taken?

- *Notify blood bank of previous reaction*
- *Possibly pre-medicate with acetaminophen and diphenhydrAMINE*
- *Keep emergency supplies nearby*

What should patient teaching include?

- *Medical alert bracelet*
- *Direct relationship between number of transfusions received and number of circulating antibodies, thus increasing the likelihood of a future transfusion reaction*
- *Possible need for pre-medication*
- *Possibility of autologous transfusions*

After Healthcare Provider Orders for State 3, 4, 5, or 6:

What is the rationale for the ordered lab work?

- *Bilirubin: Red blood cell breakdown leads to heme which is converted to bilirubin*
- *Haptoglobin: Assesses rate at which red blood cells are being destroyed; hemoglobin is released with hemochancelysis*
- *Hemoglobinuria: Measures free unbound hemoglobin in urine*

Why did the surgeon increase the IV rate?

- *For volume replacement due to massive vasodilation, peripheral pooling and relative hypovolemia*

What is the rationale for ordering methylPREDNISolone?

- *Controls systemic manifestations of anaphylaxis by providing an anti-inflammatory effect. Also decreases the uptake of histamine and inhibits cytokines*

State 8 Complete Recovery:

What is the therapeutic effect of epinephrine in the treatment of anaphylaxis?

- *Increases peripheral vascular resistance*
- *Improves blood pressure and coronary perfusion*
- *Reverses peripheral vasodilation*
- *Decreases angioedema*
- *Creates positive inotropic and chronotropic cardiac effects*
- *Improves bronchodilation*
- *Reduces inflammatory mediators*

Teaching Q&A Continued

What is the rationale behind administering the epinephrine IM versus subcutaneous or IV push?

- *Current evidence supports IM route as relatively safe and associated with improved push?*
- *Higher plasma concentration levels than subcutaneous (SUBCUT) route*
- *Striking difference in time of maximum plasma concentration levels (IM=8 minutes, SUBCUT=34 minutes)*
- *IV associated with induction of fatal cardiac arrhythmias and myocardial infarction*
- *Major adverse effects when given too rapidly, inadequately diluted, or in excessive dose*

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