David Johnson

Age: 72

Weight: 70 kg

Base: Stan D. Ardman II

Overview

Synopsis

The learner is providing care for a 72-year-old male who presented to the Emergency Department (ED) two hours ago with a gastrointestinal (GI) bleed. His chief complaints are a feeling of weakness and tarry stools for the past two weeks. The SCE is intended to assist the learner in administering packed red blood cells (PRBCs) per the facility-specific blood component administration policy and evaluating the patient's response to interventions.

This Simulated Clinical Experience (SCE) consists of seven states that are transitioned manually at the facilitator's discretion, except for **State 3 Mild Anaphylaxis** and **State 5 Epinephrine Administered**. With manual transitions, instructors should advance to the applicable state when appropriate interventions are performed. The first automatic transition occurs in **State 3 Mild Anaphylaxis**. If time in state is greater than two minutes, the scenario progresses to **State 4 Severe Anaphylaxis**. The second occurs in **State 5 Epinephrine Administered**. If time in state is greater than 90 seconds, the scenario progresses to **State 6 Recovery**.

There are two alternate pathways. The first occurs in **State 3 Mild Anaphylaxis**. If epinephrine is given IV, the facilitator should advanced the scenario to **State 7 Ventricular Fibrillation**. The second occurs in **State 4 Severe Anaphylaxis**. If epinephrine is given IV, the facilitator should advanced the scenario to **State 7 Ventricular Fibrillation**.

During **State 1 Initial Assessment**, the patient demonstrates a HR in the 100s, BP in the 90s/50s, RR in the 20s, SpO_2 in the mid 90s on room air and a temperature of 37.6˚C. Breath sounds are clear bilaterally. His skin is warm, pale and dry. He is alert and oriented to person, place and time and rates his pain as 0/10. Bowel sounds are hyperactive. The patient's lab results are CBC: Hgb 7.2, Hct 21.6%. No premedications are prescribed, and PRBCs are available in the blood bank. The learner is expected to administer PRBCs per the facility's blood component administration policy, perform an initial physical assessment and perform pre-transfusion checks. The scenario progresses to the next state at the facilitator's discretion.

In **State 2 Blood Started**, the patient's condition stays the same, with HR in the 100s, BP in the 80s/50s, RR in the low 20s and SpO_2 in the mid 90s on room air. The blood has just arrived from the blood bank and the learner is given a bag of simulated blood. The learner is expected to verify blood product with two registered nurses or a registered nurse and an approved second person per facility protocol and initiate the transfusion. It is not necessary to administer the blood through the software. After the PRBCs are infusing, the facilitator should advanced the scenario to the next state and inform the learners it is now ten minutes after the infusion was started and the patients's call light goes on.

In **State 3 Mild Anaphylaxis**, the patient's condition worsens, with a HR in 120s, BP in the 80s/40s, RR in the 20s and SpO_2 in the high 80s on room air. The patient's breath sounds reveal wheezing and his tongue is semi-swollen. He complains of feeling anxious, restless, short of breath and dizzy. The learner is expected to recognize signs and symptoms of an adverse reaction to blood administration, perform a focused assessment, provide appropriate patient care on recognition of the adverse reaction, stop the infusion, start a normal saline infusion and notify the healthcare provider using SBAR. If time in state is greater than two minutes, the scenario automatically progresses to **State 4 Severe Anaphylaxis**. When the healthcare provider is notified and orders are received and clarified and epinephrine is administered correctly, the facilitator should advanced the scenario to **State 5 Epinephrine Administered**. If the learner did not question the healthcare provider about the route of epinephrine administration and gives epinephrine IV instead of IM, the facilitator should advanced the scenario to **State 7 Ventricular Fibrillation**.

In **State 4 Severe Anaphylaxis**, the patient's condition worsens, with a HR in the 140s, BP in the 70s/40s, RR in the low 30s and SpO_2 in the mid 80s with oxygen at 60% via non-rebreather mask. Breath sounds reveal continued wheezing and the tongue is completely swollen. The learner is expected to perform a focused assessment, recognize worsening symptoms of anaphylaxis, stop the blood, start a saline infusion, check for the right patient and right blood, administer oxygen, notify the healthcare provider using SBAR and place the patient on a bedside monitor. When the healthcare provider is notified and orders are received and clarified and epinephrine is administered IM, the facilitator should advanced the scenario to **State 5 Epinephrine Administered**. If the learner did not question the healthcare provider about the route of epinephrine administration and gives epinephrine IV instead of IM, the facilitator should advanced the scenario to **State 7 Ventricular Fibrillation**.

In **State 5 Epinephrine Administered**, the patient's condition improves, with a HR in the 170s, BP in the 120s/100s, RR in high 20s, SpO_2 in the low 90s with oxygen at 60% via non-rebreather mask and a temperature of 38.6˚C. The patient's lungs are clear and his tongue is no longer swollen. Patient's skin is flushed post epinephrine, his hands have a slight tremor and he states that his anxiety and shortness of breath have improved. The learner is expected to perform a focused assessment. If the time in state is greater than 90 seconds, the scenario automatically progresses to the next state.

In **State 6 Recovery**, the patient's condition improves, with a HR in the 100s to 110s, BP in the 100s/70s, RR in the teens and SpO_2 in the high 90s with oxygen at 2 LPM via nasal cannula. The learner is expected to notify the blood bank of the blood reaction and complete facility-specific tasks and documentation. The facilitator acts as the blood bank personnel and asks for the facility specific materials and specimen to be sent to the lab along with the report of suspected transfusion reaction. If the learner gets to this point, the scenario ends.

In **State 7 Ventricular Fibrillation**, the patient's condition deteriorates, with a HR of 0, BP in the 20s/20s and RR of 0. Breath sounds are absent and his cardiac rhythm reveals course ventricular fibrillation. The patient is unresponsive and cyanotic. The learner is expected to begin basic life support, call a code and administer epinephrine IV. The scenario ends when the code is called. If the simulation is ended here, immediate debriefing followed by an opportunity to correct performance is recommended.

Author

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Reviewer: Teresa Millwater, METI-Sarasota, FL, 2009

Background

Patient History

Past Medical History: None

Allergies: None

Medications: None

Code Status: Full code

Social/Family History: Lives alone with a cat

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 72-year-old male who presented to the Emergency Department two hours ago with a gastrointestinal bleed. His chief complaints are a feeling of weakness and tarry stools for the past two weeks.

Background:
No past medical history reported. The patient has no known drug allergies.

Assessment:
Vital Signs: On admission to Emergency Department – HR 96, BP 110/70, RR 20, SpO_2 95% on room air, Temp 36.5˚C
General Appearance: Appears his age
Cardiovascular: Normal Sinus Rhythm
Respiratory: Clear bilaterally and respirations regular
GI: Abdomen soft, non-distended. Hyperactive bowel sounds with the last bowel movement this morning. No hematemesis
GU: States he is voiding without difficulty and has voided 200 mL since admission
Extremities: Circulation, sensation and movement adequate in all extremities

Skin: Warm, dry and pale
Neurological: Alert and oriented, pupils equal and reactive to light, no neurological deficits noted
IV: 18-gauge saline lock in right arm
Labs: CBC, type and screen for two units PRBCs
Fall Risk: Weakness
Pain: No complaints of pain, only weakness

Recommendations:
Patient is stable and the plan is to admit him for observation and workup.
Check on admission orders the healthcare provider is currently writing.

Orders

Initial Orders:
Diagnosis: Gastrointestinal Bleed
Condition: Fair
Allergies/Adverse Drug Reactions: No known drug allergies
Vital Signs/Monitoring: Every 4 hours
Weight and Intake/Output: Weigh daily; hemoccult stool x 3
Diet: Clear liquids
Activity Level: As tolerated
Oxygen Therapy: Titrate oxygen therapy to maintain SpO_2 greater than 92%
IV: Saline lock
Transfuse with 2 units of PRBCs per facility policy

State 3 or State 4 Orders:
Epinephrine 0.3 mg (no route given). If questioned about route of administration, healthcare provider replies “IM”
Diphenhydramine 25 mg IV
Start 500 mL normal saline bolus

State 6 Orders:
Methylprednisolone 125 mg IV
Famotidine 20 mg IV

Preparation

Learning Objectives

Goals
Demonstration of the attitudes/behaviors and technical, intellectual and interpersonal skills that comprise the critical thinking that results in high standards of safe patient care.

Learning Objectives
- Administers PRBCs per facility-specific blood component administration policy (SAFETY and EVIDENCE-BASED PRACTICE)
- Prioritizes the nursing management of a patient receiving blood or blood products (PATIENT-CENTERED CARE)
- Recognizes the signs and symptoms of an adverse reaction to blood component administration (EVIDENCE-BASED PRACTICE)
- Evaluates the patient's response to interventions and modifies the nursing care as appropriate for the patient experiencing an adverse reaction to blood component administration (PATIENT-CENTERED CARE)

Significant Events/Medical Crisis
Identify sentinel events:
- Blood transfusion reaction/anaphylaxis

Important required medical interventions to be performed by the learner in the scenario:
- Initiates packed red blood cell infusion per facility policy
- Recognizes transfusion reaction
- Provides appropriate care on recognition of an adverse transfusion reaction

Alternate Clinical Pathways:
- If nurse does not recognize a blood transfusion reaction and the blood continues to infuse, the anaphylaxis progresses to anaphylactic shock and death
- If the nurse fails to ask for a route and gives the epinephrine IV, then the patient goes into ventricular fibrillation

Learner Performance Measures

State 1 Initial Assessment:
Objectives:
- Administers PRBCs per facility-specific blood component administration policy

Assessment:
- Performs an initial physical assessment
  - Vital signs
  - IV Access

Interventions:
- Performs pre-transfusion checks
- Calls for blood using patient verification

Safety Checks
- Reads back orders and labs
- Checks patient identification
- Takes MAR to the bedside
- Wears appropriate personal protective equipment
- Administers medications correctly using the Six Rights of medication administration

State 2 Blood Started:
Interventions:
- Starts packed red blood cell infusion
- Verifies blood products with two registered nurses or a registered nurse and an approved second person, per facility policy

State 3 Mild Anaphylaxis:
Objectives:
- Recognizes signs and symptoms of an adverse reaction to blood transfusion
- Provides appropriate patient care on recognition of an adverse reaction

Assessment:
- Performs a focused assessment
  - Vital signs
  - Cardiac
  - Respiratory
  - Skin
  - Mental status

Interventions:
- Stops blood infusion
- Starts normal saline infusion
- Checks for right patient and right blood
- Administers oxygen

- Calls healthcare provider using SBAR
- Places on bedside monitor

State 4 Severe Anaphylaxis:
Objectives:
- Recognizes signs and symptoms of adverse reaction to blood transfusion
- Provides appropriate patient care on recognition of adverse reaction

Assessment:
- Performs a focused assessment
  - Vital signs
  - Cardiac
  - Respiratory
  - Skin
  - Mental status

Interventions:
- Stops blood infusion
- Starts saline infusion
- Checks for right patient and right blood
- Administers oxygen
- Calls healthcare provider using SBAR
- Places on bedside monitor

State 5 Epinephrine Administered:
Assessment:
- Performs a focused assessment

Interventions:
- Clarifies route of administration with healthcare provider
- Administers epinephrine 0.3 mg IM (0.3 mL of 1:1,000 dilution)
- Administers normal saline bolus 500 mL

State 6 Recovery:
Interventions:
- Notifies blood bank of blood reaction
- Completes facility-specific tasks and documentation

Interventions After State 6 Orders Received:
- Administers methylprednisolone 125 mg IV
- Administers famotidine 20 mg IV

State 7 Ventricular Fibrillation:
Interventions:
- Begins basic life support/CPR and calls code
- Administers epinephrine IV

Preparation Questions

N/A

Equipment and Supplies

IV Supplies
18-gauge IV catheter
Distilled water 250 mL (labeled 0.9% Normal Saline, PRBCs) (2)
Distilled water 1000 mL (labeled 0.9% Normal Saline)
Transparent dressing
Y-type blood administration tubing
IV pump/tubing
Saline flushes (2)
Alcohol wipes (5)

Medication Supplies
Distilled water vial (labeled Methylprednisolone 125 mg/2 mL, Famotidine 20 mg/2 mL, Diphenhydramine 50 mg/2 mL) (3)
Cartridge syringe 10 mL (labeled Epinephrine 1:1,000 0.1 mg/mL)

Oxygen, Airway and Ventilation Supplies
Oxygen flowmeter
Oxygen source
Nasal cannula, venturi mask, non-rebreather mask (1 each)

Miscellaneous
Stethoscope
Patient chart with appropriate forms and order sheets
Patient identification band
Red and blue food coloring (1 each)
Blood bank labels (2)
BP cuff adapted for use with simulator
Sharps container
Non-sterile gloves (1 box)
Syringes and needles (6)

Monitors Required
ECG
NIBP
SpO_2

Notes

Facilitator Notes

This SCE was created with the patient David Johnson, 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.

If using the Muse platform, don't hit Run until you are ready to start the scenario. If using the HPS6 platform, open the patient and scenario directory. Do not open the scenario until you are ready to start the SCE.

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

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

If the patient becomes unconscious in the SCE, remember the patient stops speaking.

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. Place the simulator in a sitting position. Place IV saline lock in right arm.

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 eyeshadow) to the lips and nail beds, as indicated.

When the learner initiates cardiac monitoring, the tracing and heart rate appear on a real ECG monitor for those simulators with this feature. For simulators without ECG monitoring, have the learner apply ECG electrodes to the mannequin and attach the leads. Once all 3 or 5 leads are in place, reveal the TouchPro or Waveform display ECG tracing.

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 a code cart and either an automated external defibrillator or a defibrillator with the code cart.

Simulation center personnel should play the following roles:
- Healthcare provider
- Emergency Department 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 transferring unit (simulation lab personnel) providing verbal handoff to the admitting unit (learner) using SBAR.

Have the learners roleplay 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 become inappropriate in response. Emphasize the importance of data organization and completeness when communicating.

Roleplay intra-professional communication by having the learner hand off to the admitting or transferring unit or have the learner hand off to the next shift.

When learners apply and/or titrate oxygen, the facilitator should open the Oxygen Intervention Option or Treatment Scenario and choose the appropriate flow rate. If using the HPS, no software command is necessary when real oxygen is applied.

When learners provide pharmaceutical interventions, the facilitator should open the Medication Intervention Option or Treatment Scenario and choose the appropriate medication. If using the drug recognition feature of the HPS, no software command is necessary when a drug is administered using that system.

When learners provide IV fluid interventions, the facilitator should open the Intervention Option or Treatment Scenario and choose the appropriate fluid and volume to be administered.

Debriefing and instruction after the scenario are critical. Learners and instructors may wish to view a videotape 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 students 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

Who is responsible for obtaining written consent for a blood transfusion and what form is used?
- *Refer to facility-specific protocol*

If the information on the blood component does not match the information on the patient's chart exactly, what should you do?
- *Call the blood bank and follow the facility's protocol*

What are the intended effects of epinephrine in this setting? What are the common side effects? Discuss age-specific considerations of epinephrine administration for this patient.
- *Epinephrine is the first line of treatment for anaphylaxis of any etiology. The alpha and beta sympathetic effects directly counteract the adverse effects of histamine. The alpha effect on histamine is vasodilation and the alpha effect of epinephrine is vasoconstriction. The beta effect on histamines is bronchoconstriction and the beta effect on epinephrine is bronchodilation*
- *Common side effects of epinephrine include tachycardia, increased blood pressure and tremulousness. In elderly patients, care is necessary as epinephrine could precipitate or exacerbate myocardial ischemia or infarction. Signs and symptoms would include dysrhythmias, ST elevation, chest pain and other symptoms of cardiac ischemia/infarction*

When is it appropriate to give intravenous epinephrine? What dilution would be used, and how fast would it be administered?
- *IV epinephrine is given only in the presence of profound shock and circulatory collapse.*
- *When given intravenously, a 1:10,000 dilution is administered over 10 minutes. The 1:1,000 dilution is NEVER given intravenously – fatal dysrhythmias and cardiac arrest may occur*

What is the best practice for priming the blood administration tubing?
- *Prime tubing and cover blood filter with normal saline before introducing blood into the tubing, because it reduces damage to the red blood cells if they hit the filter*

References

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