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| **Maryland Next Gen NCLEX Test Bank Project**  **September 1, 2022** | | | |
| **Case Study Topic**:  (& Standalone bowtie) | Deep Vein Thrombosis II | **Author:** | Dawn Leukhardt, MSN, RN  College of Southern Maryland  LaPlata, Maryland |

**Case Summary**

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| A 69-year-old male client is admitted to the medical-surgical unit for an evaluation of pain and edema of the right lower extremity. The onset of symptoms was 2 days prior to arrival. Client is diagnosed with a deep vein thrombosis requiring heparin therapy. |

**Objectives**

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| 1. Identify signs and symptoms of deep vein thrombosis.  2. Plan care for client with deep vein thrombosis.  3. Educate client on treatment and prevention of deep vein thrombosis.  4. Identify treatment and risks of pharmacological intervention (heparin).  5. Plan discharge for the client with deep vein thrombosis on warfarin therapy.  6. Evaluate client understanding of discharge teaching. |

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| **Case Study Link** | **Case Study QR Code** |
| **Case Study Question 6 of 6**  <https://umaryland.az1.qualtrics.com/jfe/form/SV_0ilLSDPflpnK0HI> |  |
| **Bow-tie QR Code** | **Bow-tie Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_7OqmvUKCcWAWX4y> |

**Case References**

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| 1. **Bruner and Suddarth (2022)** Textbook of Medical-Surgical Nursing **15th Edition** |

**Case Study Question 1 of 6**

The nurse on the medical-surgical unit is caring for a 69-year-old male client with pain and swelling of the right lower extremity.

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| **Nurses’ Notes** |
| **Day 1. 0930** **Admission note**: Client admitted from the Emergency Department via stretcher and transferred to bed. Client is alert and oriented. Saline lock IV in the R antecubital vein patent. Right lower extremity noted to have 2+ pedal edema, pain 8/10 in right calf. Warmth noted to right calf. Client has positive motion and sensation to right lower extremity. Right pedal pulse weak, palpable. R lower extremity elevated on 2 pillows. VS: BP 145/82, HR 96, RR 16, Temp 36.7C (98F). Client ordered to be on complete bedrest. Client made aware. | |

* Which 4 findings are most concerning?
* 2+ pedal edema\*
* Pain 8/10 in right calf\*
* Warmth noted to right calf\*
* Positive motion R lower extremity
* Right pedal pulse weak\*
* Right lower extremity elevated
* Blood Pressure 145/82
* HR 96
* Positive sensation R lower extremity

**Scoring Rule: 0/1**

**Rationale:** The nurse should recognize the following as signs of a possible deep vein thrombosis: pedal edema, calf pain, warmth to right calf, and a weak pedal pulse. Positive motion and sensation are expected, and not concerning. Blood pressure and heart rate are borderline, which is likely related to the pain rate and not a primary concern. The right lower extremity and bedrest orders must be followed but are not overall concerning about the client’s health condition.

**Case Study Question 2 of 6**

The nurse on the medical-surgical unit is caring for a 69-year-old male client with pain and swelling of the right lower extremity.

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| **Nurses’ Notes** |
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* For each potential assessment finding, click to indicate if the finding is consistent with a deep vein thrombosis, a soft tissue injury, or an infection. Each finding may be consistent with more than one conditions

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| --- | --- | --- | --- |
| Potential Assessment finding | Deep vein thrombosis | Soft tissue injury | Infection |
|  | * \* | * \* | * \* |
|  | * \* |  |  |
|  | * \* | * \* | * \* |
|  | * \* |  | * \* |
|  |  | * \* |  |

Note: Each column must have at least 1 response option selected.

**Scoring Rule: +/-**

**Rationale:** Edema and pain are consistent all three problems. Warmth to the calf may be seen with infection and DVT. A decreased pedal pulse most suggest DVT. Limited range of motion are consistent with soft tissue injury, but not DVT.

**Case Study Question 3 of 6**

The nurse on the medical-surgical unit is caring for a 69-year-old male client with pain and swelling of the right lower extremity.

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| **Nurses’ Notes** |
| **Day 1. 0930** **Admission note**: Client admitted from the Emergency Department via stretcher and transferred to bed. Client is alert and oriented. Saline lock IV in the R antecubital vein patent. Right lower extremity noted to have 2+ pedal edema, pain 8/10 in right calf. Warmth noted to right calf. Positive Homan’s sign to R lower extremity noted. Client has positive motion and sensation to right lower extremity. Right pedal pulse weak, palpable. R lower extremity elevated on 2 pillows. VS: BP 145/82, HR 96, RR 16, Temp 36.7C (98F). Client ordered to be on complete bedrest. Client made aware. | |

* Drag the most appropriate word from the choices to fill in the blank of the following sentence.

The nurse should recognize that the client is most likely experiencing

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| Word Choices |
| Cellulitis of the right lower extremity |
| Right leg deep vein thrombosis\* |
| Sprain to the right leg |
| Osteomyelitis to the right leg |

**Scoring Rule: 0/1**

**Rationale:** The most likely cause of the client’s symptoms are right leg deep vein thrombosis(DVT). While some symptoms are consistent with other potential causes such as a sprain or infection the only diagnosis consistent with all of the client’s symptoms is DVT.

**Case Study Question 4 of 6**

The nurse on the medical-surgical unit is caring for a 69-year-old male client with pain and swelling of the right lower extremity.

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| **Nurses’ Notes** |
| **Day 1. 0930** **Admission note**: Client admitted from the Emergency Department via stretcher and transferred to bed. Client is alert and oriented. Saline lock IV in the R antecubital vein patent. Right lower extremity noted to have 2+ pedal edema, pain 8/10 in right calf. Warmth noted to right calf. Positive Homan’s sign to R lower extremity noted. Client has positive motion and sensation to right lower extremity. Right pedal pulse weak, palpable. R lower extremity elevated on 2 pillows. VS: BP 145/82, HR 96, RR 16, Temp 36.7C (98F). Client ordered to be on complete bedrest. Client made aware.  **1010**: Radiology called results of right leg ultrasound: Positive for deep vein thrombosis of the right posterior tibial vein. Provider made aware. New orders pending. | |

Nurses’ notes have been updated with most recent radiology results.

* For each potential intervention, click to specify whether the intervention is indicated or not indicated to include in the plan of care.

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| --- | --- | --- |
| Potential Intervention | Indicated | Contraindicated |
| Obtain partial thromboplastin times | * \* |  |
| Begin anticoagulation therapy | * \* |  |
| Compression stockings to bilateral lower extremities | * \* |  |
| Ambulate client 3 times a day |  | * \* |
| Elevate right lower extremity | * \* |  |
| Massage right lower extremity 2 times daily |  | * \* |

**Scoring Rule: 0/1**

**Rationale**: The nurse should anticipate anticoagulation therapy which may include an initial bolus dose of heparin followed by a continuous infusion. The heparin will require baseline PTT and consistent monitoring of the PTT every 6 hours per protocol. Compression stockings and elevating the right lower extremity are indicated. Ambulation is contraindicated until anticoagulation has begun due to the risk of mobilizing the venous thromboembolism. Massage is also contraindicated because of risk of mobilizing the thrombus.

**Case Study Question 5 of 6**

The nurse on the medical-surgical unit is caring for a 69-year-old male client with pain and swelling of the right lower extremity.

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| **Nurses’ Notes** | |
| **Day 1. 0930** **Admission note**: Client admitted from the Emergency Department via stretcher and transferred to bed. Client is alert and oriented. Saline lock IV in the R antecubital vein patent. Right lower extremity noted to have 2+ pedal edema, pain 8/10 in right calf. Warmth noted to right calf. Client has positive motion and sensation to right lower extremity. Right pedal pulse weak, palpable. R lower extremity elevated on 2 pillows. VS: BP 145/82, HR 96, RR 16, Temp 36.7C (98F). Client ordered to be on complete bedrest. Client made aware  **1010**: Radiology called results of right leg ultrasound: positive for deep vein thrombosis of the right posterior tibial vein. Provider made aware. New orders pending.  **1018**: Orders have been entered. | | |
| **Orders** |
| **Category** | **Orders** | |
| Labs: | Draw Prothrombin Time (Pt), Partial Thromboplastin Time (PTT) STAT | |
| Medications: | Administer Heparin 80 units/Kg IV bolus now.  After initial bolus begin Heparin Weight-Based Protocol Continuous IV Infusion:  **Starting dose**: 18 units/Kg/hr.  Draw serum PTT 6 hours after infusion begins, then Q 6 hours. Call results | |
| Nursing: | Activity: strict bedrest  Place compression stockings on bilateral lower extremities  Elevate to right lower extremity  Closely monitor for signs of bleeding | |

The nurse reviews the physician’s orders.

* For each order, click to specify if the nurse should implement the order immediately, within the next hour, or before the end of the shift.

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| Order | Immediately | Within the hour | Before the end of the shift |
| Draw Pt/PTT | * \* |  |  |
| Administer Heparin 80 units/Kg IV bolus |  | * \* |  |
| Begin Heparin at 18 units/Kg/hr |  | * \* |  |
| Re-draw PTT 6 hours after start of Heparin |  |  | * \* |
| Strict bedrest | * \* |  |  |
| Place compression stockings on lower extremities |  |  | * \* |
| Elevate right lower extremity |  | * \* |  |
| Closely monitor for signs of bleeding |  | * \* |  |

**Scoring Rule: 0/1**

**Rationale:** The nurse should have the Pt/PTT drawn immediately since it is a stat order and the heparin cannot be started until it is completed. Both the bolus dose and initial infusion of Heparin should begin within the hour to prevent further extension of the DVT. The re-draw of the PTT should occur 6 hours after the initial dose per orders. Strict bedrest should be implemented immediately to prevent mobilizing the clot. Compression stockings will likely need to be obtained from supply and can be placed before the end of the shift. The right leg should be elevated sooner rather than later, but is not a first priority. Monitoring for signs of bleeding is not indicated until the first dose of heparin is initiated but should begin concurrently with the administration of the bolus dose of heparin.

**Case Study Question 6 of 6**

The nurse on the Medical-Surgical unit is caring for a 69-year-old male client with pain and swelling of the right lower extremity.

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| **Nurses’ Notes** | |
| **Day 1. 0930** **Admission note**: Client admitted from the Emergency Department via stretcher and transferred to bed. Client is alert and oriented. Saline lock IV in the R antecubital vein patent. Right lower extremity noted to have 2+ pedal edema, pain 8/10 in right calf. Warmth noted to right calf. Client has positive motion and sensation to right lower extremity. Right pedal pulse weak, palpable. R lower extremity elevated on 2 pillows. VS: BP 145/82, HR 96, RR 16, Temp 36.7C (98F). Client ordered to be on complete bedrest. Client made aware  **1010**: Radiology called results of right leg ultrasound: positive for deep vein thrombosis of the right posterior tibial vein. Provider made aware. New orders pending.  **1018**: Orders have been entered. | | |
| **Orders** |
| **Category** | **Orders** | |
| Labs: | Draw Prothrombin Time (Pt), Partial Thromboplastin Time (PTT) STAT | |
| Medications: | Administer Heparin 80 units/Kg IV bolus now.  After initial bolus begin Heparin Weight-Based Protocol Continuous IV Infusion:  **Starting dose**: 18 units/Kg/hr.  Draw serum PTT 6 hours after infusion begins, then Q 6 hours. Call results | |
| Nursing: | Activity: strict bedrest  Place compression stockings on bilateral lower extremities  Elevate to right lower extremity  Closely monitor for signs of bleeding | |
| **Day 3:** Discharge Planning | **Discharge home**: Provide discharge teaching for anticoagulation therapy (Warfarin) and deep vein thrombosis prevention. Follow up in 1 week. | |
| **Progress Notes** | |
| **Day 3. 1015**: Client cleared for discharge home. Heparin discontinued as ordered, Warfarin started. Discharge instructions provided to client including Warfarin therapy, prevention of deep vein thrombosis and risk reduction (health and weight management). Client verbalized understanding. Client able to state self-management of discharge teaching, Clarification provided as needed. Client to follow up in one week. Client discharged via wheelchair with all belongings. | | |

The client is reassessed on the third day and discharge orders are received.

* Which client statements indicate the teaching was understood? Select All That Apply.
* “To relieve my stress, I should have a glass of wine before dinner.”
* “I will eat more spinach and kale every day.”
* “I will throw away my straight razor and buy an electric one.”\*
* “If I miss a dose of my medicine, I will contact my doctor.”\*
* “Controlling my blood pressure is not important.”
* “When I travel, I will get out and walk every 3-4 hours.”
* “I set an alarm, so I take my medicine the same time daily.”\*

**Scoring Rule: +/-**

**Rationale**: The client should maintain a healthy weight and control blood pressure to reduce risks of DVT. The client should also avoid alcohol due to the blood thinning properties associated with alcohol combined with the Warfarin therapy. The client should avoid green leafy vegetables since they contain Vitamin K which could decrease the therapeutic effect of the Warfarin. Due to the bleeding risk the client should use an electric razor. It is important for client to take the medication at the same time every day, so he should contact the doctor if a dose is missed for further instruction. Client is a risk for recurrence of DVT and should get out every 1-2 hours while traveling.

**Bowtie**

Client is a 69 -year-old- male with a recent diagnosis of deep vein thrombosis is seen in emergency department.

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| **Nurses’ Notes** |
| **EMERGENCY DEPARTMENT TRIAGE NOTE:**  **1520**: The client arrives by ambulance to the Emergency Department with difficulty breathing, sharp pain in chest on inspiration and cough, onset 2 hours prior to arrival. Lung sounds diminished bilaterally. Client diaphoretic, tachypneic, using accessory muscles with inspiration. Vital Signs: BP 166/103, HR122, RR 36, Temp. 37.2 degrees Celsius, pulse oximetry 88% on room air. Client immediately placed in room. Provider called to beside for rapid assessment. | |

* Complete the diagram by dragging from the choices below to specify what condition the client is most likely experiencing, 2 actions the nurse should take to address that condition, and 2 parameters the nurse should monitor to assess the client’s progress.

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| Action to take |  | Parameter to monitor |
|  | Condition most likely experiencing |  |
| Action to take |  | Parameter to monitor |
|  |  |  |
| **Actions to take** | **Potential conditions** | **Parameters to monitor** |
| Place client in high-fowlers position\* | Pneumonia | Hourly arterial blood gasses |
| Titrate oxygen to maintain oxygen saturation > 99%-100% | Myocardial infarction | Continuous non-invasive BP monitoring |
| Administer broad-spectrum antibiotics stat | Pulmonary embolism\* | Respiratory status\* |
| Obtain 2 sets of blood cultures | Fat embolism | Renal functions |
| Prepare client for a stat CT scan of the chest\* |  | Continuous cardiac monitoring\* |

**Scoring Rule: 0/1**

**Rationale:** Pulmonary embolism is the most common complication of deep vein thrombosis. Clinical manifestations include difficulty breathing, inspiratory chest pain and cough. Actions the nurse should take are to elevate the head of the bed in High Fowlers Position to promote oxygenation, and to prepare for a diagnostic CT scan of the chest to confirm the diagnosis. Oxygen is needed; however, the goal is to maintain a saturation of > 95%, not 99%-100% as this may be unrealistic. Antibiotics and blood cultures are not indicated. Arterial blood gasses are indicated; however, the frequency is not realistic or necessary. Respiratory rate, pulse oximetry and cardiac monitoring should be monitored closely. BP should be checked frequently, but not continuously. Renal Function should be checked prior to CT scan with contrast, but not the highest priority for ongoing monitoring.