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| **Maryland Next Gen NCLEX Test Bank Project**  **September 1, 2022** | | | |
| **Case Study Topic**:  (stand alone bow-tie) | Pressure Injury | **Author:** | Mary Beverly Gallagher, MS, RN, CNE  Assistant Professor  Harford Community College |

**Case Summary**

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| A wheelchair- bound client comes to clinic for a routine checkup. Skin breakdown is discovered on the left heel. The wound is assessed and identified as a stage II pressure injury. Two weeks later, the wound shows improvement with treatment . |

**Objectives**

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| 1. Identify risk factors and signs and symptoms of skin breakdown. 2. Perform a wound assessment. 3. Identify Stage II pressure injury. 4. Perform wound care. 5. Educate client on treatment plan. 6. Recognize that pressure injury is improving. |

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| **Case Study Link** | **Case Study QR Code** |
| <https://umaryland.az1.qualtrics.com/jfe/form/SV_aYtAlNRXHHP82dE> |  |
| **Bow-tie QR Code** | **Bow-tie Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_3e2Dw5IGoxrIW4m> |

**Case References**

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| 1. Berman, Snyder, & Frandsen (2021). Kozier & Erb’s Fundamentals of Nursing. 11th ed 2. Wilkinson, Treas, Barnett, & Smith (2020). Davis advantage for Fundamentals of Nursing. 4th ed |

**Case Study Question 1 of 6**

The nurse cares for a 19-year-old wheelchair bound male who has come to the clinic with his mother for a routine checkup.

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| **Nurses’ Notes** |
| 1000: Client received for routine checkup accompanied by mother with whom he lives. Client has paraplegia secondary to spinal cord injury. Client is alert and oriented X3. Denies pain or any problems. Mother is concerned about “red area on his left heel.” VS: T – 97.9 F (36.6 C), P – 76, RR – 16, BP – 112/68. Lungs clear, S1S2 audible with no murmurs, gallops, rubs. Bowel sounds hypoactive. Client has full active range of motion in bilateral upper extremities with light touch sensation intact in fingers. No feeling or movement below waist. Full passive range of motion bilaterally in lower extremities. Open area noted on left heel - foul odor detected. Skin otherwise intact. | |

* Which findings are of **most** concern to the nurse? Select all that apply.
* Bowel sounds
* Open area on heel\*
* Range of motion
* Blood pressure
* Light touch sensation in fingers
* Foul odor\*
* Absence of feeling below waist

**Scoring Rule: +/-**

**Rationale:** Blood pressure, light touch sensation, and bowel sounds are within normal parameters. The range of motion and absence of feeling below waist are expected for a client with paraplegia. A breakdown in skin with a foul odor are not normal findings and require further assessment.

**Case Study Question 2 of 6**

The nurse cares for a 19-year-old wheelchair bound male who has come to the clinic with his mother for a routine checkup.

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| **Nurses’ Notes** |
| 1000: Client received for routine checkup accompanied by mother with whom he lives. Client has paraplegia secondary to spinal cord injury. Client is alert and oriented X3. Denies pain or any problems. Mother is concerned about “red area on his left heel.” VS: T – 97.9 F (36.6 C), P – 76, RR – 16, BP – 112/68. Lungs clear, S1S2 audible with no murmurs, gallops, rubs. Bowel sounds hypoactive. Client has full active range of motion in bilateral upper extremities with light touch sensation intact in fingers. No feeling or movement below waist. Full passive range of motion bilaterally in lower extremities. Open area noted on left heel - foul odor detected. Skin otherwise intact. | |

* For each potential finding click to indicate if the finding is consistent with pressure injury or venous stasis ulcer. Each potential finding may support more than one type of condition.

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| Potential finding | Pressure injury | Venous stasis ulcer |
| Immobility | * \* | * \* |
| Inadequate calf muscle function |  | * \* |
| Located over bony prominence | * \* |  |
| Surrounding skin brown and edematous |  | * \* |
| Shallow wound | * \* | * \* |
| Tissue ischemia | * \* |  |

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

**Scoring Rule: +/-**

Rationale: Immobility is a risk factor for both venous stasis ulcers and pressure injuries and both may present as shallow. Venous stasis ulcers result from inadequate calf muscle function which results in venous pooling, edema, and impaired microcirculation of the skin. The skin surrounding venous stasis ulcers is reddened or brown and edematous. Pressure injuries are caused by pressure, shear, and friction which result in tissue ischemia and injury and tend to be located over bony prominences.

**Case Study Question 3 of 6**

The nurse cares for a 19-year-old wheelchair bound male who has come to the clinic with his mother for a routine checkup.

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| **Nurses’ Notes** |
| 1000: Client received for routine checkup accompanied by mother with whom he lives. Client has paraplegia secondary to spinal cord injury. Client is alert and oriented X3. Denies pain or any problems. Mother is concerned about “red area on his left heel.” VS: T – 97.9 F (36.6 C), P – 76, RR – 16, BP – 112/68. Lungs clear, S1S2 audible with no murmurs, gallops, rubs. Bowel sounds hypoactive. Client has full active range of motion in bilateral upper extremities with light touch sensation intact in fingers. No feeling or movement below waist. Full passive range of motion bilaterally in lower extremities. Open area noted on left heel - foul odor detected. Skin otherwise intact.  1015: Left heel wound measures 3.5cm X 4cm X 0.5cm. No undermining present. Wound bed is pink. Slight foul odor detected. No drainage noted. Skin surrounding injury pink, warm, and dry. Provider and wound nurse notified of wound. | |

* 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** |
| Stage II pressure injury\* |
| Stage III pressure injury |
| Stage IV pressure injury |
| Venous stasis ulcer |

**Scoring Rule: 0/1**

**Rationale:** The assessment data (location over bony prominence, shallow wound, surrounding skin within normal parameters) indicates a stage II pressure injury. The skin surrounding a venous stasis ulcer is typically reddened or brown and edematous. Stage III injuries affect top 2 layers of skin and fatty tissue. A stage IV injury affects muscle, tendons, ligaments or bones.

**Case Study Question 4 of 6**

The nurse cares for a 19-year-old wheelchair bound male who has come to the clinic with his mother for a routine checkup.

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| **Nurses’ Notes** |
| 1000: Client received for routine checkup accompanied by mother with whom he lives. Client has paraplegia secondary to spinal cord injury. Client is alert and oriented X3. Denies pain or any problems. Mother is concerned about “red area on his left heel.” VS: T – 97.9 F (36.6 C), P – 76, RR – 16, BP – 112/68. Lungs clear, S1S2 audible with no murmurs, gallops, rubs. Bowel sounds hypoactive. Client has full active range of motion in bilateral upper extremities with light touch sensation intact in fingers. No feeling or movement below waist. Full passive range of motion bilaterally in lower extremities. Open area noted on left heel - foul odor detected. Skin otherwise intact.  1015: Left heel wound measures 3.5cm X 4cm X 0.5cm. No undermining present. Wound bed is pink. Slight foul odor detected. No drainage noted. Skin surrounding injury pink, warm, and dry. Provider and wound nurse notified of wound.  1030: Wound nurse here to assess left heel wound. Confirms stage II pressure injury. | |

The wound nurse confirms a stage II pressure injury.

* For each potential order, click to specify whether the order is indicated or contraindicated to include in the plan of care.

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| **Potential Order** | **Indicated** | **Contraindicated** |
| Debride wound |  | * x |
| Leave wound open to air |  | * x |
| Hydrocolloid dressing | * x |  |
| Clean with saline | * x |  |
| Start IV antibiotics |  | * x |

**Scoring Rule: 0/1**

**Rationale**: There is no indication that the wound requires debridement – a stage II pressure injury does not have slough or necrotic tissue. The wound should be cleaned with an isotonic solution such as normal saline to remove bacteria or other microorganisms. The wound should be dressed to protect it from mechanical injury, protect it from microbial contamination, and provide moist wound healing. A hydrocolloid dressing is appropriate as it will produce a moist environment that facilitates healing and will protect the wound from bacterial contamination. The client does not need IV antibiotics at this point.

**Case Study Question 5 of 6**

The nurse cares for a 19-year-old wheelchair bound male who has come to the clinic with his mother for a routine checkup.

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| **Nurses’ Notes** |
| 1000: Client received for routine checkup accompanied by mother with whom he lives. Client has paraplegia secondary to spinal cord injury. Client is alert and oriented X3. Denies pain or any problems. Mother is concerned about “red area on his left heel.” VS: T – 97.9 F (36.6 C), P – 76, RR – 16, BP – 112/68. Lungs clear, S1S2 audible with no murmurs, gallops, rubs. Bowel sounds hypoactive. Client has full active range of motion in bilateral upper extremities with light touch sensation intact in fingers. No feeling or movement below waist. Full passive range of motion bilaterally in lower extremities. Open area noted on left heel - foul odor detected. Skin otherwise intact.  1015: Left heel wound measures 3.5cm X 4cm X 0.5cm. No undermining present. Wound bed is pink. Slight foul odor detected. No drainage noted. Skin surrounding injury pink, warm, and dry. Provider and wound nurse notified of wound.  1030: Wound nurse here to assess left heel wound. Confirms stage II pressure injury. | |
| **Orders** |
| 1. Cleanse left heel wound with normal saline and dress with hydrocolloid dressing. 2. Client to return in two weeks for follow up | |

The nurse receives wound care orders.

* What 3 actions should the nurse teach the family about wound care?
* Wash hands prior to performing the dressing change \*
* Massage the right heel each evening to promote blood flow
* Monitor for signs of infection \*
* Elevate heels when in bed\*
* Eat a diet high in complex carbohydrates
* Apply a cold pack to the wound if swelling occurs

**Scoring Rule: 0/1**

**Rationale:** Hand hygiene should be performed prior to dressing changes to prevent introducing microorganisms to the wound. If the wound shows signs of infection this would need to be reported in order to modify the treatment plan. Elevating the heels while in bed will relieve direct pressure. Massage over bony prominences should not be done as this could irritate the area and lead to tissue injury. The client should consume a diet with adequate calories, protein, vitamins, iron, and fluids. A cold pack should not be applied to an open wound as the cold can increase tissue damage by decreasing blood flow to the wound.

**Case Study Question 6 of 6**

The nurse cares for a 19-year-old wheelchair bound male who returns to the clinic two weeks after receiving treatment for a Stage II pressure injury.

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| **Nurses’ Notes** |
| 1000: Client received for routine checkup accompanied by mother with whom he lives. Client has paraplegia secondary to spinal cord injury. Client is alert and oriented X3. Denies pain or any problems. Mother is concerned about “red area on his left heel.” VS: T – 97.9 F (36.6 C), P – 76, RR – 16, BP – 112/68. Lungs clear, S1S2 audible with no murmurs, gallops, rubs. Bowel sounds hypoactive. Client has full active range of motion in bilateral upper extremities with light touch sensation intact in fingers. No feeling or movement below waist. Full passive range of motion bilaterally in lower extremities. Open area noted on left heel - foul odor detected. Skin otherwise intact.  1015: Left heel wound measures 3.5cm X 4cm X 0.5cm. No undermining present. Wound bed is pink. Slight foul odor detected. No drainage noted. Skin surrounding injury pink, warm, and dry. Provider and wound nurse notified of wound.  1030: Wound nurse here to assess left heel wound. Confirms stage II pressure injury.  1045: Wound cleansed with normal saline solution and hydrocolloid dressing applied. Client’s mother educated on how to clean wound and change dressing. Treatment plan discussed with client and his mother. Client to return in two weeks for wound follow up. | |
| **Orders** |
| 1. Cleanse left heel wound with normal saline and dress with hydrocolloid dressing. 2. Client to return in two weeks for follow up | |
| **Progress Notes** |
| Seen in clinic for follow up of a stage II pressure injury diagnosed 15 days ago. Wound measures 3 cm x 3.7 cm x 0.2 cm. No odor, drainage, or signs of infection. Skin surrounding wound remains pink, dry, and intact. | |

The client returns to the clinic and the nurse assesses the client’s pressure injury.

* Complete the following sentence by choosing from the list of options.

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| The nurse determines the client’s status is | Select |
| improving\* |
| deteriorating |
| unchanged |
| The nurse should now | Select |
| call the wound nurse to recommend a change in treatment plan |
| recommend the use of a vacuum-assisted closure system |
| reinforce wound care interventions and pressure injury prevention strategies\* |

**Scoring Rule: 0/1**

**Rationale:** The wound has decreased in size and has no odor. This indicates that the wound is healing. Since the wound is healing it is not necessary to change the treatment plan and a wound vacuum assisted closure system is not indicated. Interventions that the client’s mother is performing, and pressure injury prevention strategies should be reinforced.

Bowtie

The nurse cares for a 19-year-old wheelchair bound male who has come to the clinic with his mother for a routine checkup.

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| **Nurses’ Notes** |
| 1000: Client received for routine checkup accompanied by mother with whom he lives. Client has paraplegia secondary to spinal cord injury. Client is alert and oriented X3. Denies pain or any problems. Mother is concerned about “red area on his left heel.” VS: T – 97.9 F (36.6 C), P – 76, RR – 16, BP – 112/68. Lungs clear, S1S2 audible with no murmurs, gallops, rubs. Bowel sounds hypoactive. Client has full active range of motion in bilateral upper extremities with light touch sensation intact in fingers. No feeling or movement below waist. Full passive range of motion bilaterally in lower extremities. Open area noted on left heel. Skin otherwise intact.  1015: Left heel wound measures 3.5cm X 4cm X 0.5cm. No undermining present. Wound bed is pink. No odor or drainage noted. Skin surrounding injury pink, warm, and dry. | |

* 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** |
| Elevate heels\* | Dermatitis | Extent of scaling of lesions |
| Administer Vitamin A topically | Venous stasis ulcer | Signs of infection\* |
| Perform wound care\* | Pressure injury\* | Distribution of rash |
| Administer antihistamine | Psoriasis | Lower extremity edema |
| Administer compression therapy |  | Depth of wound\* |

**Scoring Rule: 0/1**

Rationale: The assessment data (location over bony prominence, shallow wound, surrounding skin within normal parameters) indicates a stage II pressure injury. Wound care will facilitate healing and elevating the heels while in bed will relieve direct pressure. The wound should be monitored for signs of infection. A decrease in wound depth would indicate that the pressure injury was improving.