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| **Maryland Next Gen NCLEX Test Bank Project**  **September 1, 2022; Updated May 16, 2023** | | | |
| **Case Study Topic**:  (with Trend) | Burns (2nd & 3rd degree) | **Author:** | Stacy McGrath, Ed.D, MSN, RN, Salisbury University |

**Case Summary**

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| A 55-year-old female is admitted to the burn unit at 2000 after sustaining second and third degree burns to 36% of Total Body Surface Area in a house fire. The fire occurred at 1800 today. The client was brought to the Emergency Room by ambulance. She was stabilized and fluids were started and then she was transferred to the burn unit. The client shows signs of shock, and the nurse plans care and evaluates outcomes. |

**Objectives**

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| 1. Recognize cues in a client with burns. 2. Identify the signs and symptoms of client with burn shock. 3. Plan care for a client with burn shock. 4. Identify pathological changes that occur with burns. 5. Evaluate client’s outcomes following nursing intervention. |

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| **Case Study Link** | **Case Study QR Code** |
| <https://umaryland.az1.qualtrics.com/jfe/form/SV_cC45X6a615zWvnE> |  |
| **Trend QR Code** | **Trend Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_2atRY9jdqxbMzaK> |

**Case References**

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| 1. Ignatavicius, D., Workman, M. L. & Rebar, C. R. (2018). Medical-surgical nursing: Concepts for  interprofessional collaborative care (9th ed.) |

**Case Study Question 1 of 6**

The nurse cares for a 55-year-old female admitted to the burn unit following a house fire.

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| **Nurses’ Notes** | |
| 2000: A 55- year-old female arrives to the emergency department via ambulance with bilateral second and third degree burns to the front lower extremities from a house fire that occurred at 1800 today. Burns estimated at 36% of total body surface area. Client weighs 220 lbs/100 kg. Fluid resuscitation started with Ringer’s lactate IV.  2100: Admitted to the burn unit. Vital signs as noted. Morphine sulfate given for pain. Wound care was provided by the nurse. Breath sounds clear. Bilateral +2 pitting edema was noted in the lower extremities. Doppler pedal pulses present. | | | | |
| **Vital Signs** | |
| Time | 2000 | | 2100 |
| Temperature | 37.8 C/100 F | | 37.5 C/99.5 F |
| Heart rate | 130 | | 135 |
| Respirations | 28 | | 32 |
| Blood pressure | 88/58 | | 80/54 |
| Pulse oximeter | 92 on 4L NC | | 92 on 4L NC |
| Pain | 6/10 | | 4/10 |
| **Intake & Output** | |
| Fluid resuscitation order: 4 mL Ringer’s lactate x kilogram weight x body surface burned = 14,400 mL  Give half 8 hours since burn event and the second half over remaining 24 hours | | | | |
| Hour | 2000 | | 2100 |
| IV rate | 1200 mL/hr | | 1200 mL/hr |
| IV intake | Started | | 600 mL RL |
| Output |  | | 20 mL |

* Drag the 4 findings are urgent to follow-up to the box on the right.

|  |  |
| --- | --- |
| Client Findings | Top 4 Findings |
| Respirations | \* |
| Pitting edema |  |
| Blood pressure | \* |
| Urine output | \* |
| Heart rate | \* |
| Temperature |  |
| Pulse oximeter |  |
| Pain |  |

**Scoring Rule: 0/1**

**Rationale:** The nurse will need to follow up on findings that indicate the client may be having respiratory distress or shock; increased respirations, drop in blood pressure, tachycardia, and decreased urinary output. The pulse oximeter is low, but not critical. A client with burns will have pitting edema as a result of fluid shifting but it would not be a priority finding over any airway issues. Clients with burns will have thermoregulation and pain issues but again, the airway and blood pressure need to be addressed quickly.

**Case Study Question 2 of 6**

The nurse cares for a 55-year-old female admitted to the burn unit following a house fire.

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| **Nurses’ Notes** | |
| 2000: A 55 -year-old female arrives to the emergency department via ambulance with bilateral second and third degree burns to the front lower extremities from a house fire that occurred at 1800 today. Burns estimated at 36% of total body surface area. Client weighs 220 lbs/100 kg. Fluid resuscitation started with Ringer’s lactate IV.  2100: Admitted to the burn unit. Vital signs as noted. Morphine sulfate given for pain. Wound care was provided by the nurse. Breath sounds clear. Bilateral +2 pitting edema was noted in the lower extremities. Doppler pedal pulses present. | | | | |
| **Vital Signs** | |
| Time | 2000 | | 2100 |
| Temperature | 37.8 C/100 F | | 37.5 C/99.5 F |
| Heart rate | 130 | | 135 |
| Respirations | 28 | | 32 |
| Blood pressure | 88/58 | | 80/54 |
| Pulse oximeter | 92 on 4L NC | | 92 on 4L NC |
| Pain | 6/10 | | 4/10 |
| **Intake & Output** | |
| Fluid resuscitation order: 4 mL Ringer’s lactate x kilogram weight x body surface burned = 14,400 mL  Give half 8 hours since burn event and the second half over remaining 24 hours | | | | |
| Hour | 2000 | | 2100 |
| IV rate | 1200 ml/hr | | 1200 mLl/hr |
| IV intake | Started | | 600 ml RL |
| Output |  | | 20 ml |

* For each client finding click to specify whether the finding is consistent with compartment syndrome, inhalation injury, or distributive shock. Each assessment may support more than one condition.

|  |  |  |  |
| --- | --- | --- | --- |
| Finding | Compartment syndrome | Inhalation  injury | Distributive  Shock |
| Urine output |  |  | * \* |
| Tachypnea |  | * \* | * \* |
| Blood pressure |  |  | * \* |
| Peripheral edema | * \* |  | * \* |
| Pain | * \* |  |  |

Note: Each column must have at least one finding.

**Scoring Rule: +/-**

Rationale: If the client is progressing into shock from their injuries, they will have low blood pressure, and an elevated heart rate and respirations. They may also experience edema as fluid shifts which can lead to peripheral edema. Since the fluid is shifting, they become hypovolemic and the urinary output declines. Clients with compartment syndrome have pain and peripheral edema. Clients with burns can experience airway obstruction and tachypnea at any point after the event due to smoke or inhalation injuries. This manifests as tachypnea, dyspnea, or changes in breaths sounds.

**Case Study Question 3 of 6**

The nurse cares for a 55-year-old female admitted to the burn unit following a house fire.

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| **Nurses’ Notes** | |
| 2000: A 55- year-old female arrives to the emergency department via ambulance with bilateral second and third degree burns to the front lower extremities from a house fire that occurred at 1800 today. Burns estimated at 36% of total body surface area. Client weighs 220lbs/100 kg. Fluid resuscitation started with Ringer’s lactate IV.  2100: Admitted to the burn unit. Vital signs as noted. Morphine sulfate given for pain. Wound care was provided by the nurse. Breath sounds clear. Bilateral +2 pitting edema was noted in the lower extremities. Doppler pedal pulses present. | | | | |
| **Vital Signs** | |
| Time | 2000 | | 2030 |
| Temperature | 37.8 C/100 F | | 37.5 C/99.5 F |
| Heart rate | 130 | | 135 |
| Respirations | 28 | | 32 |
| Blood pressure | 88/58 | | 80/54 |
| Pulse oximeter | 92 on 4L NC | | 92 on 4L NC |
| Pain | 6/10 | | 4/10 |
| **Intake & Output** | |
| Fluid resuscitation order: 4 mL Ringer’s lactate x kilogram weight x body surface burned = 14,400 mL  Give half 8 hours since burn event and the second half over remaining 24 hours | | | | |
| Hour | 2000 | | 2100 |
| IV rate | 1200 ml/hr | | 1200 mL/hr |
| IV intake | Started | | 600 ml RL |
| Output |  | | 20 ml |

* Complete the sentence from the list of drop-down options.

|  |  |
| --- | --- |
| The client is at most risk for complications associated with | compartment syndrome  inhalation injury  distributive shock\* |
| The client care priority is to | assist with intubation  increase fluids\*  relieve compression |

**Scoring Rule: 0/1**

**Rationale**: Clients with major burns can go into shock due to massive fluid shifting. Signs of distributive shock will include increased heart rate and respirations and decreased blood pressure. While the respiratory rate is increasing, the pulse oximeter is not decreasing on low levels of oxygen. Edema is seen with compartment syndrome, but pain is typically severe and there would be other neurovascular findings.

**Case Study Question 4 of 6**

The nurse cares for a 55- year-old female admitted to the burn unit following a house fire.

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| **Nurses’ Notes** | |
| 2000: A 55- year-old female arrives to the emergency department via ambulance with bilateral second and third degree burns to the front lower extremities from a house fire that occurred at 1800 today. Burns estimated at 36% of total body surface area. Client weighs 220 lbs/100 kg. Fluid resuscitation started with Ringer’s lactate IV.  2100: Admitted to the burn unit. Vital signs as noted. Morphine sulfate given for pain. Wound care was provided by the nurse. Breath sounds clear. Bilateral +2 pitting edema was noted in the lower extremities. Doppler pedal pulses present. | | | | |
| **Vital Signs** | |
| Time | 2000 | | 2030 |
| Temperature | 37.8 C/100 F | | 37.5 C/99.5 F |
| Heart rate | 130 | | 135 |
| Respirations | 28 | | 32 |
| Blood pressure | 88/58 | | 80/54 |
| Pulse oximeter | 92 on 4L NC | | 92 on 4L NC |
| Pain | 6/10 | | 4/10 |
| **Intake & Output** | |
| Fluid resuscitation order: 4 mL Ringer’s lactate x kilogram weight x body surface burned =14,400 mL  Give half 8 hours since burn event and the second half over remaining 24 hours | | | | |
| Hour | 2000 | | 2100 |
| IV rate | 1200 mL/hr | | 1200 ml/hr |
| IV intake | Started | | 600 ml RL |
| Output |  | | 20 mL |

* The nurse contacts the physician about the client’s status. What orders does the nurse anticipate including in the plan of care?

|  |  |  |
| --- | --- | --- |
| Potential order | Indicated | Not indicated |
| Obtain a blood gas | * X |  |
| Double the infusion IV rate |  | * X |
| Monitor basic metabolic panel | * X |  |
| Obtain a chest X-ray | * X |  |
| Culture wounds |  | * X |

**Scoring Rule: 0/1**

**Rationale:** While aggressive fluid resuscitation is needed, it must be done judiciously to prevent fluid overload and pulmonary complications. A chest-Xray and blood gas should be obtained to assess pulmonary status. IV rates are typically increased no more than 20% per hour to prevent fluid overload. Monitoring metabolic panel helps assess fluid and electrolyte imbalances. It is too soon to suspect a wound infection.

**Case Study Question 5 of 6**

The nurse cares for a 55-year-old female admitted to the burn unit following a house fire.

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| **Nurses’ Notes** | | |
| 2000: A 55-year-old female arrives to the emergency department via ambulance with bilateral second and third degree burns to the front lower extremities from a house fire that occurred at 1800 today. Burns estimated at 36% of total body surface area. Client weighs 220lbs/100 kg. Fluid resuscitation started with Ringer’s lactate IV.  2100: Admitted to the burn unit. Vital signs as noted. Morphine sulfate given for pain. Wound care was provided by the nurse. Breath sounds clear. Bilateral +2 pitting edema was noted in the lower extremities. Doppler pedal pulses present. | | | | | |
| **Vital Signs** | | |
| Time | 2000 | | | 2100 |
| Temperature | 37.8 C/100 F | | | 37.5 C/99.5 F |
| Heart rate | 130 | | | 135 |
| Respirations | 28 | | | 32 |
| Blood pressure | 88/58 | | | 80/54 |
| Pulse oximeter | 92 on 4L NC | | | 92 on 4L NC |
| Pain | 6/10 | | | 4/10 |
| **Intake & Output** | | |
| Fluid resuscitation order: 4 mL Ringer’s lactate x kilogram weight x body surface burned = 14,400 mL  Give half 8 hours since burn event and the second half over remaining 24 hours | | | | | |
| Hour | 2000 | | | 2100 |
| IV rate | 1200 ml/hr | | | 1200 ml/hr |
| IV intake | Started | | | 600 ml RL |
| Output |  | | | 20 ml |
| **Orders** | |
| * Obtain chest Xray, ABG, Complete metabolic panel * Oxygen per nasal cannula 2 to 6 Liters to maintain pulse oximetry at 92 or greater * Titrate IVF based on urine output up to a maximum of 2000 ml/hr:   + <15ml/hr - increase IV rate 20%   + 15-29 ml/hr - ncrease IVF 10%   + 30-50 ml/hr - leave current rate   + >50ml/hr - decrease 10% * Give 500 mL 5% albumin over 2 hours as needed for systolic B/P<80, diastolic B/P<50 | | | | | |

The physician assesses the client and the nurse receives orders.

* What action should the nurse take first?
* Obtain a chest Xray
* Obtain an ABG
* Increase the IV rate\*
* Give albumin

**Scoring Rule: 0/1**

**Rationale**: The most critical intervention is to increase the IVF. The chest Xray and blood gas can be done after the fluids are increased. The vital signs do not yet indicate albumin is needed.

**Case Study Question 6 of 6**

The nurse cares for a 55-year-old female admitted to the burn unit following a house fire.

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| **Nurses’ Notes** | | |
| 2000: A 55- year-old female arrives to the emergency department via ambulance with bilateral second and third degree burns to the front lower extremities from a house fire that occurred at 1800 today. Burns estimated at 36% of total body surface area. Client weighs 220 lbs/100 kg. Fluid resuscitation started with Ringer’s lactate IV.  2100: Admitted to the burn unit. Vital signs as noted. Morphine sulfate given for pain. Wound care was provided by the nurse. Breath sounds clear. Bilateral +2 pitting edema was noted in the lower extremities. Doppler pedal pulses present.  2200: IV rate increased. Labs drawn. Portable chest done.  2300: Audible stridor | | | | | | | | | |
| **Vital Signs** | | |
| Time | 2000 | | | 2100 | 2200 | | 2300 | |
| Temperature | 37.8 C/100 F | | | 37.5 C/99.5 F | 37.6 C/99.7 F | | 37.6 C/99.7 F | |
| Heart rate | 130 | | | 135 | 138 | | 136 | |
| Respirations | 28 | | | 32 | 35 | | 38 | |
| Blood pressure | 88/58 | | | 80/54 | 82/56 | | 84/54 | |
| Pulse oximeter | 92 on 4L NC | | | 92 on 4L NC | 91 4L NC | | 90 6 L NC | |
| Pain | 6/10 | | | 4/10 | 5/10 | | 5/10 | |
| **Intake & Output** | | |
| Fluid resuscitation order: 4 mL Ringer’s lactate x kilogram weight X body surface burned = 14,400 mL  Give half 8 hours since burn event and the second half over remaining 24 hours | | | | | | | | | |
| Hour | 2000 | | | 2100 | 2200 | 2300 | |
| IV rate | 1200 ml/hr | | | 1200 ml/hr | 1320 ml//hr | 1320 ml/hr | |
| IV intake | Started | | | 600 ml RL | 1200 RL | 1320 RL | |
| Output |  | | | 20 ml | 10 ml | 50 ml | |
| **Orders** | |
| * Obtain chest Xray, ABG, complete metabolic panel * Oxygen per nasal cannula 2 to 6 Liters to maintain pulse oximetry at 92 or greater * Titrate IVF based on urine output up to a maximum of 2000mL/hr:   + <15 ml/hr - increase IV rate 20%   + 15-29 ml/hr - increase IVF 10%   + 30-50 ml/hr - leave current rate   + >50 ml/hr - decrease 10% * Give 500 ml 5% albumin over 2 hours as needed for systolic B/P<80, diastolic B/P<50 | | | | | | | | | |
| **Diagnostic Report** | |
| * Chest X-ray shows minimal inhalation injury | | | | | | | | | |

The nurse reassesses the client at 2300.

* For each finding, click to indicate if the finding indicates the client’s condition has improved, declined, or is unchanged.

|  |  |  |  |
| --- | --- | --- | --- |
| Finding | Improved | Declined | Unchanged |
| Blood pressure |  |  | * \* |
| Heart rate |  |  | * \* |
| Urine output | * \* |  |  |
| Oxygen saturation |  | * \* |  |
| Breath sounds |  | * \* |  |
| Temperature |  |  | * \* |

**Scoring Rule: 0/1**

**Rationale:** The client’s hemodynamic status is stabilizing with fairly consistent heart and blood pressure measurements. The temperature also has remained fairly stable. Urine output of 50 mL an hour is a sign of improved renal perfusion. Stridor and decreased pulse oximeter readings suggest the development of upper airway edema.

**Trend**

The nurse cares for a 55- year-old female admitted to the burn unit following a house fire.

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| **Nurses’ Notes** | | |
| 2000: A 55- year-old female arrives to the emergency department via ambulance with bilateral second and third degree burns to the front lower extremities from a house fire that occurred at 1800 today. Burns estimated at 36% of total body surface area. Client weighs 220 lbs/100 kg. Fluid resuscitation started with Ringer’s lactate IV.  2100: Admitted to the burn unit. Vital signs as noted. Morphine sulfate given for pain. Wound care was provided by the nurse. Breath sounds clear. Bilateral +2 pitting edema was noted in the lower extremities. Doppler pedal pulses present.  2200: IV rate increased. Labs drawn. Portable chest done.  2300: Audible stridor | | | | | | | | | |
| **Vital signs** | | |
| Time | 2000 | | | 2100 | 2200 | | 2300 | |
| Temperature | 37.8 C/100 F | | | 37.5 C/99.5 F | 37.6 C/99.7 F | | 37.6 C/99.7 F | |
| Heart rate | 130 | | | 135 | 138 | | 136 | |
| Respirations | 28 | | | 32 | 35 | | 38 | |
| Blood pressure | 88/58 | | | 80/54 | 82/56 | | 84/54 | |
| Pulse oximeter | 92 on 4L NC | | | 92 on 4L NC | 91 4L NC | | 90 6 L NC | |
| Pain | 6/10 | | | 4/10 | 5/10 | | 5/10 | |
| **Intake & Output** | | |
| Fluid resuscitation order: 4 mL Ringer’s lactate x kilogram weight x body surface burned =14,400 mL  Give half 8 hours since burn event and the second half over remaining 24 hours | | | | | | | | | |
| Hour | 2000 | | | 2100 | 2200 | 2300 | |
| IV rate | 1200 ml/hr | | | 1200 ml/hr | 1320 ml/hr | 1320 ml/hr | |
| IV intake | Started | | | 600 mL RL | 1200 RL | 1320 RL | |
| Output |  | | | 20 ml | 10 ml | 50 ml | |
| **Orders** | |
| * Obtain chest Xray, ABG, Complete metabolic panel * Oxygen per nasal cannula 2 to 6 Liters to maintain pulse oximetry at 92 or greater * Titrate IVF based on urine output up to a maximum of 2000mL/hr:   + <15 ml/hr - increase IV rate 20%   + 15-29 ml/hr - increase IVF 10%   + 30-50 ml/hr - leave current rate   + >50 mL/hr - decrease 10% * Give 500 mL 5% albumin over 2 hours as needed for systolic B/P<80, diastolic B/P<50 | | | | | | | | | |
| **Diagnostic Report** | |
| * Chest X-ray shows minimal inhalation injury | | | | | | | | | |

The nurse reassesses the client at 2300 after implementing the treatment plan.

* For each finding, click to indicate if the finding indicates the client’s condition has improved, declined, or is unchanged.

|  |  |  |  |
| --- | --- | --- | --- |
| Finding | Improved | Declined | Unchanged |
| Blood pressure |  |  | * \* |
| Heart rate |  |  | * \* |
| Urine output | * \* |  |  |
| Oxygen saturation |  | * \* |  |
| Breath sounds |  | * \* |  |
| Temperature |  |  | * \* |

**Scoring Rule: 0/1**

**Rationale:** The client’s hemodynamic status is stabilizing with fairly consistent heart and blood pressure measurements. The temperature also as remained fairly stable. Urine output of 50 mL an hour is a sign of improved renal perfusion. Stridor and decreased pulse oximeter readings suggest the development of upper airway edema.