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| **Maryland Next Gen NCLEX Test Bank Project**  **September 1, 2022** | | | |
| **Case Study Topic**:  (Stand-alone bow-tie) | Transfusion reaction  (Mild allergic) | **Author** | Desiree Hensel PhD, RN, CNE, CHSE  Hensel Nursing Education Consulting |

**Case Summary**

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| 65 year old male client with cancer needs transfusion in outpatient setting. Develops symptoms of mild allergic reaction. Transfusion is stopped & diphenhydramine is given. Symptoms resolve 30 minutes later. Learner should recognize s/s of transfusion reaction, differentiate this reaction from other types of reactions, and implement appropriate treatment plan. |

**Objectives**

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| 1. Recognize S/S of transfusion reaction |
| 1. Differentiates types of transfusion reactions |
| 1. Plans care for a client with a mild allergic transfusion reaction |
| 1. Educate client about the treatment plan for a mild allergic transfusion reaction |
| 1. Understands monitoring needed following a mild allergic transfusion reactions |

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| **Case Study Link** | **Case Study QR Code** |
| <https://umaryland.az1.qualtrics.com/jfe/form/SV_885xJK1LRnneYyG> |  |
| **Bow-tie QR Code** | **Bow-tie Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_4VMW6Rt7x79A9E2> |

**Case References**

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| *Potter & Perry (2020).* [*Fundamentals of Nursing*](https://www.amazon.com/Fundamentals-Nursing-Patricia-Potter-FAAN/dp/032367772X/ref=sr_1_1?crid=2PQZRXCDKN00K&keywords=potter+and+perry+fundamentals+of+nursing+10th+edition&qid=1647524534&sprefix=potter+and+perr%2Caps%2C88&sr=8-1)*. 10th ed* |

**Case Study Question 1 of 6**

The nurse cares for a 65- year- old male with cancer who needs a blood transfusion in the outpatient-clinic.

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| **Nurses’ Notes** |
| 1030. 1 unit whole blood ordered over 4hrs. Client feels fatigued. No other major complaints or known allergies. Consent verified. Central line port accessed with 19-gauge Huber needle. IV infusion of NS started at 75mL/hr per central line.  1045. Client ID, blood ID, and transfusion order verified by at bedside with a second RN. Transfusion of 1 unit A+ whole blood started.  1100. Client reports itching. Facial flushing noted with localized rash on arms. No shortness of breath or back pain. | | |
| **Vital Signs** |
| Time | 1045 | 1100 |
| T | 97.6F (36.4C) | 97.8 F(36.5C) |
| P | 96 | 100 |
| RR | 20 | 22 |
| B/P | 96/60 | 100/62 |
| Pulse oximeter | 95% | 95% |
| Oxygen | Room air | Room air |
| **Laboratory Report** |
| Lab | Results | Reference range |
| Hematocrit | 26.6% | Males: 42-52% Females: 35-47% |
| Hemoglobin | 8.8g/dL | Males: 13-18 g/dL Females: 12-16 g/dL |
| Blood type | Antibodies in blood | Transfusion Type |
| A+ | Anti- B | A+,A-, O+,O- |
| **Orders** |
| * Type and cross match for 1 unit whole blood * Infuse 1 unit whole blood over 4 hours via port-a-catheter * IV 0.9NS at 75mL/ hr during transfusion | | |

The nurse assesses the client 15 minutes after beginning the transfusion.

* Which findings require **immediate** follow-up? Select all that apply.
* Blood pressure
* Heart rate
* Itching\*
* Pulse oximetry
* Respiratory rate
* Skin\*
* Temperature

**Scoring Rule: +/-**

**Rationale:** The client’s vital signs are similar to baseline. The nurse should recognize the new symptoms are skin changes & itching.

**Case Study Question 2 of 6**

The nurse cares for a 65- year- old male with cancer who needs a blood transfusion in the outpatient-clinic.

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| **Nurses’ Notes** |
| 1030. 1 unit whole blood ordered over 4hrs. Client feels fatigued. No other major complaints or known allergies. Consent verified. Central line port accessed with 19-gauge Huber needle. IV infusion of NS started at 75mL/hr per central line.  1045. Client ID, blood ID, and transfusion order verified by at bedside with a second RN. Transfusion of 1 unit A+ whole blood started.  1100. Client reports itching. Facial flushing noted with localized rash on arms. No shortness of breath or back pain. | | |
| **Vital Signs** |
| Time | 1045 | 1100 |
| T | 97.6F (36.4C) | 97.8F (36.5C) |
| P | 96 | 100 |
| RR | 20 | 22 |
| B/P | 96/60 | 100/62 |
| Pulse oximeter | 95% | 95% |
| Oxygen | Room air | Room air |
| **Laboratory Report** |
| Lab | Results | Reference range |
| Hematocrit | 26.6% | Males: 42-52% Females: 35-47% |
| Hemoglobin | 8.8g/dL | Males: 13-18 g/dL Females: 12-16 g/dL |
| Blood type | Antibodies in blood | Transfusion Type |
| A+ | Anti- B | A+,A-, O+,O- |
| **Orders** |
| * Type and cross match for 1 unit whole blood * Infuse 1 unit whole blood over 4 hours via port-a-catheter * IV 0.9NS at 75mL/ hr during transfusion | | |

* For each client finding, click to indicate if the finding is consistent with acute hemolytic, mild allergic, anaphylactic, or circulatory overload transfusion reactions. Each finding may support more than one type of transfusion reaction.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Finding | Acute  hemolytic | Mild  allergic | Anaphylactic | Circulatory overload |
| Flushing | * \* | * \* | * \* | * \* |
| Hives |  | * \* | * \* |  |
| Itching |  | * \* | * \* |  |
| Respiratory status |  | * \* |  |  |
| Heart rate |  | * \* |  |  |

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

**Scoring Rule: +/-**

**Rationale:** The nurse would suspect a transfusion reaction but needs to think quickly through which types of reaction might be occurring. The nurse would analyze the client cues and compare and contrast different types of transfusion reactions. Flushing is caused by changes in circulation and can be seen in all types of transfusion reaction. Hives and itching are signs of an allergic reactions which can be mild or severe as in anaphylaxis. The client’s heart rate and respiratory status are stable. Symptoms of shock would be expected with hemolytic or anaphylactic reactions. Circulatory overload would manifest as respiratory changes and tachycardia.

**Case Study Question 3 of 6**

The nurse cares for a 65- year- old male with cancer who needs a blood transfusion in the outpatient-clinic.

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| **Nurses’ Notes** |
| 1030. 1 unit whole blood ordered over 4hrs. Client feels fatigued. No other major complaints or known allergies. Consent verified. Central line port accessed with 19-gauge Huber needle. IV infusion of NS started at 75mL/hr per central line.  1045. Client ID, blood ID, and transfusion order verified by at bedside with a second RN. Transfusion of 1 unit A+ whole blood started.  1100. Client reports itching. Facial flushing noted with localized rash on arms. No shortness of breath or back pain. | | |
| **Vital Signs** |
| Time | 1045 | 1100 |
| T | 97.6F (36.4C) | 97.8F (36.5C) |
| P | 96 | 100 |
| RR | 20 | 22 |
| B/P | 96/60 | 100/62 |
| Pulse oximeter | 95% | 95% |
| Room air | Room air | Room air |
| **Laboratory Report** |
| Lab | Results | Reference range |
| Hematocrit | 26.6% | Males: 42-52% Females: 35-47% |
| Hemoglobin | 8.8g/dL | Males: 13-18 g/dL Females: 12-16 g/dL |
| Blood type | Antibodies in blood | Transfusion Type |
| A+ | Anti- B | A+,A-, O+,O- |
| **Orders** |
| * Type and cross match for 1 unit whole blood * Infuse 1 unit whole blood over 4 hours via port-a-catheter * IV 0.9NS at 75mL/ hr during transfusion | | |

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

The nurse should recognize that the client is most likely experiencing a/an transfusion reaction.

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| --- |
| Word Choices |
| acute hemolytic |
| mild allergic\* |
| anaphylactic |
| circulatory overload |

**Scoring Rule: 0/1**

**Rationale**: Based on the stable vital signs with skin changes, the nurse would most suspect that the client is having a mild allergic reaction to a foreign protein in the donor blood.

**Case Study Question 4 of 6**

The nurse cares for a 65- year- old male with cancer who needs a blood transfusion in the outpatient-clinic.

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| **Nurses’ Notes** |
| 1030. 1 unit whole blood ordered over 4hrs. Client feels fatigued. No other major complaints or known allergies. Consent verified. Central line port accessed with 19-gauge Huber needle. IV infusion of NS started at 75mL/hr per central line.  1045. Client ID, blood ID, and transfusion order verified by at bedside with a second RN. Transfusion of 1 unit A+ whole blood started.  1100. Client reports itching. Facial flushing noted with localized rash on arms. No shortness of breath or back pain. | | |
| **Vital Signs** |
| Time | 1045 | 1100 |
| T | 97.6F (36.4C) | 97.8F (36.5C) |
| P | 96 | 100 |
| RR | 20 | 22 |
| B/P | 96/60 | 100/62 |
| Pulse oximeter | 95% | 95% |
| Oxygen | Room air | Room air |
| **Laboratory Report** |
| Lab | Results | Reference range |
| Hematocrit | 26.6% | Males: 42-52% Females: 35-47% |
| Hemoglobin | 8.8g/dL | Males: 13-18 g/dL Females: 12-16 g/dL |
| Blood type | Antibodies in blood | Transfusion Type |
| A+ | Anti- B | A+,A-, O+,O- |
| **Orders** |
| * Type and cross match for 1 unit whole blood * Infuse 1 unit whole blood over 4 hours via port-a-catheter * IV 0.9NS at 75mL/ hr during transfusion | | |

* Select the orders from each of the category the nurse anticipates including in the plan of care. Each category may have more than one order.

|  |  |
| --- | --- |
| Categories | Orders |
| Nursing | * discard blood tubing |
| * insert indwelling catheter |
| * obtain blood cultures |
| * stop transfusion\* |
| Medications | * acetaminophen |
| * diphenhydramine\* |
| * epinephrine |
| * furosemide |

**Scoring Rule: +/-**

**Rationale:** When a transfusion reaction is suspected, the plan of care includes stopping the transfusion and starting normal saline. Mild transfusion reactions are treated with an antihistamine. If the transfusion cannot be continued, blood tubing is sent to lab not discarded. Tubing should remain on the unit if there is a chance the transfusion will resume. Blood cultures would be indicated if blood contamination was suspected, but there was no fever. An indwelling catheter is indicated if shock was suspected, or hematuria was present.

**Case Study Question 5 of 6**

The nurse cares for a 65- year- old male with cancer who needs a blood transfusion in the outpatient-clinic.

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| **Nurses’ Notes** |
| 1030. 1 unit whole blood ordered over 4hrs. Client feels fatigued. No other major complaints or known allergies. Consent verified. Central line port accessed with 19-gauge Huber needle. IV infusion of NS started at 75mL/hr per central line.  1045. Client ID, blood ID, and transfusion order verified by at bedside with a second RN. Transfusion of 1 unit A+ whole blood started.  1100. Client reports itching. Facial flushing noted with localized rash on arms. No shortness of breath or back pain.  1105. Transfusion stopped. Breath sounds clear. Healthcare provider notified. | | |
| **Vital Signs** |
| Time | 1045 | 1100 |
| T | 97.6F (36.4C) | 97.8F (36.5C) |
| P | 96 | 100 |
| RR | 20 | 22 |
| B/P | 96/60 | 100/62 |
| Pulse oximeter | 95% | 95% |
| Oxygen | Room air | Room air |
| **Laboratory Report** |
| Lab | Results | Reference range |
| Hematocrit | 26.6% | Males: 42-52% Females: 35-47% |
| Hemoglobin | 8.8g/dL | Males: 13-18 g/dL Females: 12-16 g/dL |
| Blood type | Antibodies in blood | Transfusion Type |
| A+ | Anti- B | A+,A-, O+,O- |
| **Orders** |
| * Type and cross match for 1 unit whole blood * Infuse 1unit whole blood over 4 hours via port-a-catheter-HOLD * IV 0.9NS at 75mL/ hr during transfusion * Diphenhydramine 50mg IV push now | | |

The healthcare provider determines the client is experiencing a mild allergic reaction and orders diphenhydramine.

* What should the nurse teach the client about the treatment plan? Select all that apply
* The symptoms are signs of blood incompatibilities causing red blood cell destruction.
* Diphenhydramine is an antihistamine to help decrease the itching. \*
* The main side effect of antihistamines is agitation.
* Immediately report any difficulty breathing or back pain.\*
* If symptoms improve in 30 minutes the transfusion can resume slowly.\*
* Pretreatment with antihistamines may be needed for future transfusions.\*

**Scoring Rule: +/-**

**Rationale:**When a mild allergic transfusion reaction is suspected, the client is given an antihistamine and observed 30 minutes. If symptoms resolve, the transfusion can continue. Clients should be instructed to report difficulty breathing or back pain as these are signs the client is developing a more serious reaction. Pretreatment with antihistamines is typically needed for future transfusions in sensitive individuals. The suspected cause of the reaction is to a foreign protein, not an ABO or Rh incompatibility. The most common side effect of antihistamines is drowsiness.

**Case Study Question 6 of 6**

The nurse cares for a 65- year- old male with cancer who needs a blood transfusion in the outpatient-clinic.

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| **Nurses’ Notes** |
| 1030. 1 unit whole blood ordered over 4hrs. Client feels fatigued. No other major complaints or known allergies. Consent verified. Central line port accessed with 19-gauge Huber needle. IV infusion of NS started at 75mL/hr per central line.  1045. Client ID, blood ID, and transfusion order verified by at bedside with a second RN. Transfusion of 1 unit A+ whole blood started.  1100. Client reports itching. Facial flushing noted with localized rash on arms. No shortness of breath or back pain.  1105. Transfusion stopped. Breath sounds clear. Healthcare provider notified.  1115. Antihistamine given. Facial flushing gone.  1130. VS remain stable. Breath sounds clear. No visible rash. Client reports pruritus resolved. | | | | |
| **Vital Signs** |
| Time | 1045 | 1100 | 1115 | 1130 |
| T | 97.6F (36.4C) | 97.8F (36.5C) | 98.0F(36.7C) | 97.9F(36.6C) |
| P | 96 | 100 | 98 | 96 |
| RR | 20 | 22 | 20 | 18 |
| B/P | 96/60 | 100/62 | 100/68 | 98/66 |
| Pulse oximeter | 95% | 95% | 96% | 95% |
| Oxygen | Room air | Room air | Room air | Room air |
| **Laboratory Report** |
| Lab | Results | | Reference range | |
| Hematocrit | 26.6% | | Males: 42-52% Females: 35-47% | |
| Hemoglobin | 8.8g/dL | | Males: 13-18 g/dL Females: 12-16 g/dL | |
| Blood type | Antibodies in blood | | Transfusion Type | |
| A+ | Anti- B | | A+,A-, O+,O- | |
| **Orders** |
| * Type and cross match for 1 unit whole blood * Infuse 1unit whole blood over 4 hours via port-a-catheter- HOLD * IV 0.9NS at 75mL/ hr during transfusion * Diphenhydramine 50mg IV push now | | | | |

The nurse reassesses the client after implementing the treatment plan.

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

The nurse determines the client’s status is improving.\*

deteriorating.

unchanged.

The nurse should now request to discharge the client to home.

resume the transfusion.\*

admit the client for observation.

**Scoring Rule: 0/1**

**Rationale**: When the nurse reassesses the client, they find the rash and itching have resolved, and no new symptoms emerged. The nurse can make the determination that the symptoms improved with antihistamines, and the transfusion can be slowly resumed.

Bowtie

The nurse cares for a 65- year- old male with cancer who needs a blood transfusion in the outpatient-clinic.

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| **Nurses’ Notes** |
| 1030. 1 unit whole blood ordered over 4hrs. Client feels fatigued. No other major complaints or known allergies. Consent verified. Central line port accessed with 19-gauge Huber needle. IV infusion of 0.9% NS started at 75mL/hr per central line.  1045. Client ID, blood ID, and transfusion order verified by at bedside with a second RN. Transfusion of 1 unit A+ whole blood started.  1100. Client reports itching. Facial flushing noted with localized rash on arms. No shortness of breath or back pain. | | |
| **Vital Signs** |
| Time | 1045 | 1100 |
| T | 97.6F (36.4C) | 97.8F (36.5C) |
| P | 96 | 100 |
| RR | 20 | 22 |
| B/P | 96/60 | 100/62 |
| Pulse oximeter | 95% | 95% |
| Oxygen | Room air | Room air |

The nurse assesses the client 15 minutes after the beginning of the transfusion.

* 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** |
| Begin a fluid bolus | Fluid overload reaction | Urine |
| Administer diuretics | Hemolytic reaction | Skin\* |
| Administer an antihistamine\* | Mild allergic reaction\* | Breath sounds\* |
| Stop the infusion\* | Febrile nonhemolytic reaction | Back pain |
| Transfer to ICU |  | Temperature |

**Rationale**: Based on the stable vital signs with skin changes, the nurse would most suspect that the client is having a mild allergic reaction to a foreign protein in the donor blood. The nurse should stop the transfusion and administer and antihistamine. The nurse would monitor the skin for improvement and the breaths sounds to ensure the allergic reaction is continuing to be mild versus anaphalaxis.