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| **Maryland Next Gen NCLEX Test Bank Project**  **September 1, 2022** | | |
| **Case Study Topic**:  (& Standalone bowtie) | Pediatric hypoglycemia | **Author:** Josh Saylor, MSN, RN, CPN – Morgan State University |

**Case Summary**

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| A 16 year-old adolescent male with type I diabetes develops severe hypoglycemia at school. Blood glucose is checked, and glucose is given. Learner should recognize s/s of hypoglycemia, differentiate between hypo/hyperglycemia, and implement the treatment plan. |

**Objectives**

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| 1. Assess for signs of hypoglycemia or hyperglycemia  2. Perform diagnostic testing  3. Perform emergency care procedures  4. Administer medications |

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| **Case Study Link** | **Case Study QR Code** |
| <https://umaryland.az1.qualtrics.com/jfe/form/SV_869TU3guuz3oZDM> |  |
| **Bow-tie QR Code** | **Bow-tie Link** |
|  | <https://umaryland.az1.qualtrics.com/jfe/form/SV_eljHHkEaqnMqXH0> |

**Case References**

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| 1. Ricci, S. S., Kyle, T., & Carman, S. (2021). *Maternity and pediatric nursing.* 4th ed. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins. |

**Case Study Question 1 of 6**

A 16-year-old male student faints during gym class at the end of the school day and is brought to the nursing office.

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| **Nurses’ Notes** | |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache. | | | |
| **Vital Signs** | |
| Time | 1430 | |
| Temp | 37 C (98.6 F) | |
| P | 130 | |
| RR | 22 | |
| B/P | 118/60 | |
| Pulse oximeter | 98% on RA | |
| Pain (Headache) | 5/10 | |

* Click to highlight the findings that require **immediate** follow-up.

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| **Nurses’ Notes** |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student is alert and oriented but has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache. | |

**K** Key.

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| **Nurses’ Notes** |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student is alert and oriented but has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache. | |

**Scoring Rule: +/-ey**

**Rationale:** Immediate follow-up is needed regarding the cardiac concerns and pallor. The headache is a concern but likely a secondary symptom. The student is alert and oriented, and vital signs are normal except for the heart rate. Sweating is not a major concern at this time as it could be a result of gym class.

**Case Study Question 2 of 6**

A 16-year-old male student faints during gym class at the end of the school day and is brought to the nursing office

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| **Nurses’ Notes** | |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache. | | | |
| **Vital Signs** | |
| Time | 1430 | |
| Temp | 37 C (98.6 F) | |
| P | 130 | |
| RR | 22 | |
| B/P | 118/60 | |
| Pulse oximeter | 98% on RA | |
| Pain (Headache) | 5/10 | |

* For each finding click to indicate if the finding is consistent with heat exhaustion, hypoglycemia, cannabis use. Each finding may support more than one condition.

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| Finding | Heat Exhaustion | Hypoglycemia | Cannabis sse |
| Tachycardia | * \* | * \* | * \* |
| Pallor | * \* | * \* |  |
| Headache | * \* | * \* | * \* |
| Sweating | * \* | * \* |  |
| Hunger |  | * \* | * \* |
| Fatigue | * \* | * \* |  |

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

**Scoring Rule: +/-**

**Rationale:** Hypoglycemia and heat exhaustion explain nearly all the assessment findings, apart from hunger not being a symptom of heat exhaustion. Cannabis use also does not explain all the symptoms even though a 16-year-old may participate in risk taking activities such as this, however, the student being alert and oriented make this less likely.

**Case Study Question 3 of 6**

A 16-year-old male student faints during gym class at the end of the school day and is brought to the nursing office.

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| **Nurses’ Notes** | |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache.  1435. Student medical record indicates he has type 1 diabetes which he self manages. | | | |
| **Vital Signs** | |
| Time | 1430 | |
| Temp | 37 C (98.6 F) | |
| P | 130 | |
| RR | 22 | |
| B/P | 118/60 | |
| Pulse oximeter | 98% on RA | |
| Pain (Headache) | 5/10 | |

What is the top priority for the nurse to address?

* Administer glucose
* Contacting the parents
* Determining last insulin use
* Obtaining a blood glucose level\*

**Scoring Rule: 0/1**

**Rationale:** Understanding this student has type 1 diabetes, the initial focus is to determine where the current blood glucose level is to determine course of treatment.

**Case Study Question 4 of 6**

A 16-year-old male student faints during gym class at the end of the school day and is brought to the nursing office.

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| **Nurses’ Notes** | |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache.  1435. Student medical record indicates he has type 1 diabetes which he self manages.  1440. Student’s blood glucometer used with a reading of 45 mg/dl (reference range 70-140mg/dl) | | | |
| **Vital Signs** | |
| Time | 1430 | |
| Temp | 37 C (98.6 F) | |
| P | 130 | |
| RR | 22 | |
| B/P | 118/60 | |
| Pulse oximeter | 98% on RA | |
| Pain (Headache) | 5/10 | |

The nurse obtains a point of care blood glucose.

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

|  |  |
| --- | --- |
| Categories | Orders |
| Nursing | * Give 15 grams of carbohydrates\* |
| * Recheck blood glucose after 15 minutes \* |
| * Call EMS/911 STAT |
|
| Medications | * fast-acting insulin |
| * glucagon\* |
| * epinephrine |
|

**Scoring Rule: +/-**

**Rationale:** If the student remains alert and oriented ingesting carbohydrates such as orange juice or candy is appropriate along with rechecking blood glucose. Glucagon may be indicated if blood glucose still is low after treatment. A STAT call to EMS/911 is not indicated at this time as the student remains alert and oriented. Fast-acting insulin is not indicated as it would drop the blood glucose even further.

**Case Study Question 5 of 6**

A 16-year-old male student faints during gym class at the end of the school day and is brought to the nursing office.

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| **Nurses’ Notes** | |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache.  1435. Student medical record indicates he has Type 1 diabetes which he self manages.  1440. Student’s blood glucometer used with a reading of 45 mg/dl. (reference range 70-140mg/dl) | | | |
| **Vital Signs** | |
| Time | 1430 | |
| Temp | 37 C (98.6 F) | |
| P | 130 | |
| RR | 22 | |
| B/P | 118/60 | |
| Pulse oximeter | 98% | |
| Pain (Headache) | 5/10 | |
| **Emergency Orders** | |
| 1. Give 15-20 grams of fast-acting carbohydrates as able to tolerate, recheck glucose Q15 min 2. Give glucagon if patient unable to eat or drink, becomes unconscious, or has a seizure | | | |

The nurse reviews the student’s emergency orders.

* What would be appropriate sources of glucose to give the student? Select all that apply
* 1 tablespoon (15 grams) of sugar\*
* 3 glucose tablets\*
* A full-sized candy bar
* A can of soda (8oz or 240mL)
* Half cup of fruit juice (4oz or 120mL) \*
* A bag of pork rinds (3oz)

**Scoring Rule: +/-**

**Rationale:** Understanding the 15/15 rule for treatment of hypoglycemia, the half cup of fruit juice, 1 tablespoon of sugar and 3 glucose tablets are all within that 15-gram range for the student to ingest. The full-sized candy bar and can of soda are both greater than 15 grams and the pork rinds are not a good option because they have low to zero carbohydrates.

**Case Study Question 6 of 6**

A 16-year-old male student faints during gym class at the end of the school day and is brought to the nursing office.

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| **Nurses’ Notes** | |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry”. Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache.  1435. Student medical record indicates he has Type 1 diabetes which he self manages.  1440. Student’s blood glucometer used with a reading of 45 mg/dl. (reference range 70-140mg/dl)  1442. 15 grams of carbohydrates given orally. Family notified student will miss the bus home and will need to be picked up.  1457. Blood glucose checked and the reading 35 mg/dl. Student becomes disoriented and lies down. | | | |
| **Vital Signs** | |
| Time | 1430 | |
| Temp | 37 C (98.6 F) | |
| P | 130 | |
| RR | 22 | |
| B/P | 118/60 | |
| Pulse oximeter | 98% | |
| Pain (Headache) | 5/10 | |
| **Orders** | |
| 1. Give 15-20 grams of fast-acting carbohydrates as able to tolerate, recheck glucose Q15 min 2. Give glucagon if patient unable to eat or drink, becomes unconscious, or has a seizure | | | |

After 15 minutes since carbohydrates were given student’s blood glucose reassessed.

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

|  |  |
| --- | --- |
| The nurse determines the student’s status is | Select |
| improving |
| deteriorating\* |
| unchanged |
| The nurse should now | Select |
| prepare to administer glucagon\*  wait another 15 minutes to check blood glucose  give student another 15 grams of oral glucose |

**Scoring Rule: 0/1**

**Rationale:** Initial treatment with 15 grams of carbohydrates given orally was unsuccessful in raising the student’s blood glucose. The student is now becoming disoriented and will not be able to take more oral glucose and waiting 15 minutes to recheck without treatment will not aid the student. The nurse needs to prepare to administer glucagon as the student’s status is deteriorating.

**Bowtie**

A 16-year-old male student faints during gym class at the end of the school day and is brought to the nursing office.

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| **Nurses’ Notes** | |
| 1430. A 16-year-old student is brought to nursing office after fainting during gym class. Student has a pale appearance, sweating, fatigue, and states, “my head hurts and I can feel my heart pounding--- I skipped lunch, I think I am just hungry.” Pulse is 130, respirations 22, pain is reported as 5 /10 for the headache. | | | |
| **Vital Signs** | |
| Time | 1430 | |
| Temp | 37 C (98.6 F) | |
| P | 130 | |
| RR | 22 | |
| B/P | 118/60 | |
| Pulse oximeter | 98% | |
| Pain (Headache) | 5/10 | |

* 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** |
| Obtain a blood glucose\* | Hypoglycemia\* | Pulse\* |
| Administer acetaminophen | Anxiety/panic attack | Respirations |
| Encourage water consumption | Heat Exhaustion | Hunger |
| Call EMS/911 STAT | Cannabis Use | Headache |
| Check student medical chart/history\* |  | Orientation\* |

**Scoring Rule: 0/1**

**Rationale:** Student has symptoms that relate to hypoglycemia, it would be important to check the student’s history and obtain a blood glucose at this time. Student pulse is elevated and should continue to be monitored and the student is currently speaking and oriented this would need to continue to be monitored to make sure no changes in orientation occur.