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**EMS SKILL**

PATIENT ASSESSMENT & MEDICATION ADMINISTRATION

**ORAL GLUCOSE**

**PERFORMANCE OBJECTIVES**

Demonstrate proficiency in recognizing the indications, contraindications, and criteria for administration of oral glucose administration for a patient having an altered level of consciousness and a suspected history of diabetes.

**CONDITION**

Establish that a simulated patient with an altered level of consciousness who meets the criteria for administration of oral glucose and Necessary equipment will be adjacent to the simulated patient.

**EQUIPMENT**

Simulated patient, oxygen tank with a flow meter, oxygen mask, blood pressure cuff, stethoscope, glucose solution, tube of glucose paste/gel/gel, tongue blade or bite stick, timing device, clipboard, PCR forms, pen, goggles, masks, gown, gloves.

**PERFORMANCE CRITERIA**

• Items designated by a diamond (⧫) must be performed successfully to demonstrate skill competency.

• Items identified by double asterisks (\*\*) indicate actions that are required if indicated.

• Items identified by (§) should be practiced.

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| **PREPARATION** | |
| **Skill Component** | **Key Concepts** |
| ⧫ Establishes body substance isolation precautions | • Mandatory personal protective equipment - gloves  • Situational - long sleeves, goggles, masks, gown |
| ⧫ Complete a primary assessment  • General impression  • Life-threatening condition  • Assess mental status/stimulus response (AVPU)  • Assess/Manage airway  • Assess/Manage breathing   * Obtain an oxygen saturation (SpO2) reading – if available   ***\*\* Administer high flow oxygen – if indicated*** | * A goal of oxygen administration is to deliver the minimum amount of oxygen to meet the needs of the patient and to maintain an oxygen saturation level at or above 94%. * When available, use pulse oximetry to guide oxygen delivery. The desired SpO2 for most non-critical patients is 94-98%. * **SPECIAL CONSIDERATION:** For chronic obstructive pulmonary disease (COPD), the goal is to titrate oxygen to keep the SpO2 at 88-92%. * Document the SpO2 reading on the EMS Report or ePCR. |
| ⧫ Complete a secondary survey:   * Obtains vital signs * Obtains an oxygen saturation (SpO2) reading – if available | * Obtaining and documenting a baseline set of vital signs assists with determining if the patient is improving or deteriorating after medication delivery. |
| ⧫ Verbalize the indications for administration of oral  glucose solution or glucose paste/gel:   * Blood glucose reading is < 60mg/dL OR * Suspected hypoglycemia   + The patient has an altered level of consciousness   + The patient has a history of diabetes   + The patient has the ability to swallow | | * An oral dextrose solution can be any beverage that contains sugar such as milk, juice, honey, and soda. * Other forms of glucose include gel, tablets, or one (1) tablespoon of granulated sugar or honey. Three (3) packets of sugar or three (3) sugar cubes equal one (1) tablespoon. * Local protocols will dictate the level of the blood glucose level that must treated. In Los Angeles County, the blood sugar level is < 60mg/dL. * If a glucometer is not available, oral glucose should still be administered if the EMS provider suspects the patient to be hypoglycemic. |
| ⧫ Verbalize the contraindications for oral glucose solution  or oral glucose paste/gel   * Blood glucose reading is > 60mg/dL * Unconscious (relative) * No history of diabetes * Unable to swallow (relative) | | * Glucose paste/gel may still be administered to a suspected hypoglycemic patient who is unable to swallow or is unconscious. See glucose paste/gel administration. * A relative contraindication means that caution should be used if the condition exists. |
| **ADMINISTRATION OF DEXTROSE SOLUTION** | | |
| **Skill Component** | | **Key Concepts** |
| ⧫ Explain the procedure to the patient | | * Providing an explanation of the procedure aids the patient cooperation. |
| ⧫ Instruct the patient to hold the container and drink the entire contents | | * If the patient is not alert enough to hold the container, the dextrose solution cannot be administered. |
| ⧫ Reassess the patient’s level of consciousness | | * It may take up to 20 minutes to see the full effect of glucose administration. |
| **ADMINISTRATION OF GLUCOSE PASTE/GEL** | | |
| **Skill Component** | | **Key Concepts** |
| ⧫ Place the patient in left lateral position – if semi-  conscious or unconscious | | * Placing a semi-conscious/unconscious patient in left lateral position decreases the chances of aspiration based upon the position of the stomach. |
| ⧫ Apply one (1) inch of glucose paste/gel onto a tongue depressor or bite stick | | * While there are no side effects associated with the administration of oral glucose, due to the viscosity and thickness of the gel, airway obstruction is possible. * Placing a large amount of glucose paste/gel onto a tongue depressor or bite stick can lead to aspiration. |
| ⧫ Pull the patient’s cheek back with one (1) hand | | * Use caution to avoid being bitten by the patient. |
| ⧫ Insert the tongue blade or bite stick into the patient’s mouth | | * If the patient has a seizure, remove the tongue depressor immediately. * Use caution to avoid getting bitten. |
| ⧫ Re-apply/smear the 1 inch of glucose paste/gel between the patient’s cheek and gum until the entire tube is administered | | * One (1) full tube equals one (1) dose. * Lightly messaging the area between the cheek and gum assists with dispersing the gel and increasing the rate of absorption. |
| ⧫ Reassess the patient’s level of consciousness | | * It may take up to 20 minutes to see the full effect of glucose administration. |
| **REASSESSMENT**  **(Ongoing Assessment)** | | |
| **Skill Component** | | **Key Concepts** |
| ⧫ Repeat an ongoing assessment at least every **5 minutes**:   * Primary assessment * Relevant portion of the secondary assessment * Vital signs * Pain Scale | | * A patient with an altered mental status must be re-assessed every 5 minutes. * The purpose of the ongoing assessment is to recognize signs and symptoms of improvement or deterioration of the patient’s condition. |  |
| ⧫ Evaluate response to treatment | | • Patients with hypoglycemia who are successfully treated with oral glucose who then refuse transport, should be discouraged from doing so if they have: abnormal vital signs, fever, are taking oral or long acting medications including insulin, a history of alcohol abuse, possible ingestion or poisoning, or they do not have a history of diabetes. This is because these patients are at high risk for recurrent hypoglycemic episodes.   * Evaluating and comparing results from a prior assessment assists with evaluating if the patient is improving, deteriorating, or responding to treatment. |  |

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| **PATIENT REPORT AND DOCUMENTATION** | |
| **Skill Component** | **Key Concepts** |
| § Verbalize/Document  • Assessment findings before and after administration  • Drug   * + name   + dose   + route   + site   + time   + who administered medication   • Patient’s response to medication  • Respiratory/Cardiovascular status  • Mental status  • Vital signs | • Documentation must be on either the Los Angeles County EMS Report, departmental Patient Care Record form, or ePCR.  • Document administration only in the comment section on the Los Angeles County EMS Report,  • Documenting re-assessment information provides a comprehensive picture of patient’s response to treatment.  • Last re-assessment information (before patient care is transferred) should be documented in the appropriate section of the EMS form. |

Developed: 10/2017



**ADMINISTRATION OF ORAL GLUCOSE**

**Supplemental Information**

**DEFINITION:**

**Diabetes mellitus (DM):** Diabetes is a metabolic disorder in which the body is in-capable of metabolizing simple carbohydrates (glucose). Mellitus is a Greek word meaning “sweet.” It is a reference to the presence of glucose spilling out of the kidneys into the urine.

**ASSESSMENT: ALTERED LEVEL OF CONSCIOUSNESS / SEIZURE / WEAKNESS / DIZZINESS / SYNCOPE**

• Causative event and if acute or chronic

• Time of onset

• Duration of event

• Orientation level (name, place, and time)

• Associated symptoms (neuro deficits, pupil response)

• Position found in

• Length of time unconscious

• Incontinence

• Dysrhythmia

• Possible causes: (not all inclusive)

- **A** alcohol, anoxia, allergic reaction, arrhythmia (dysrhythmia)

- **E** epilepsy, electrolyte imbalance

- **I** insulin (hyper-hypoglycemia)

- **O** overdose

- **U** uremia, under-dose

- **T** trauma

- **I** infection

- **P** psychiatric, post-ictal, poisoning (ingestion, inhalation), palpitation (dysrhythmias)

- **S** stroke

**NOTES:**

• Glucose is the basic sugar in the body. Glucose and oxygen are the primary fuels required by the body for cellular metabolism.

* Adults with diabetes have a higher incidence of kidney failure and heart disease. It also effects walls of vessels and leads to a condition known as microangiopathy. Diabetes also leads to nerve damage, which results in the loss of function and feeling to the areas innervated by that nerve. Couples with vessel damage, these patients’ wounds may occur that are not noted at the time and left uncared for they lead to gangrene of the affected extremity. Approximately 60% of amputations are attributed to Diabetes.
* Insulin is a hormone that is produced by specialized cells in the pancreas called the islets of Langerhans. These cells become damaged from viruses or over-consumption of sugar over years and the result is ceased or decreased production of insulin. The only cells in the body that are not dependent upon insulin to facilitate glucose from moving in to the cells are the brain cells.

* There are two (2) forms of diabetes mellitus: type 1 and type 2. Both types result in very serious medical conditions that can be life-threatening.
* Type 1 diabetes was once referred to as “juvenile onset” diabetes because it typically occurs during childhood. Type 2 diabetes has been called “adult onset” because it typically manifests itself during adulthood. Type 1 diabetes always requires insulin while type 2 can be managed by oral medication or insulin, or a combination of both.
* Diabetes is characterized by:
  + Polyphagia – increased hunger due to the inability to transport glucose into the cell
  + Polydipsia – increased thirst due to large fluid losses caused by diuresis
  + Polyuria – increased urine output due to water being attracted to the excess glucose and diuresis
* EMTs may carry a glucometer on the ambulance if it they are employed by, and are on duty for, a Provider Agency that has been approved by the Los Angeles County EMS Medical Director.

• In life-threatening situations, an ALS Unit must be enroute or BLS should consider transport if ALS arrival is longer than transport time.

**FINGER STICK BLOOD GLUCOSE TESTING & ORAL GLUCOSE DELIVERY**

**Supplemental Information**

* Examples of oral medications used to treat Type 2 diabetes:
  + Metformin (Glucophage)
  + Sitagliptin (Januvia)
  + Rosiglitazone (Avandia)
  + Pioglitazone (ACTOS)
  + Chlorpropamide (Diabinese)
  + Glyburide (Micronase)
* Examples of insulin used to treat Type 1 diabetes:
  + Humulin
  + Novolog
  + Lantus
  + Novolin
  + Exubera
  + Apidra
  + Toujeo
  + Tresiba
  + Levemir

**MEDICATION INFORMATION: ORAL GLUCOSE PASTE/GEL**

* **Medication Name:**
  + Glutose
  + Insta-Glucose
* **Indications:** 
  + Altered menal status
  + Hx of Diabetes
  + Blood glucose < 60mg/dL
  + The ability to swallow
* **Contraindications:**
  + Unresponsive
  + Unable to swallow
  + Blood glucose > 60 mg/dL
* **Dosage:**
  + One (1) tube