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Date: January 31, 2008
To: All Hudson Valley Regional EMS Agencies
From: Hudson Valley Regional Medical Advisory Committee
Subject: Application to Provide BLS Glucometry

Enclosed are the application, forms, and training curriculum that have been approved by the Hudson Valley Regional Medical Advisory Committee (HVREMAC) as components of the BLS Glucometer Program. EMS agencies interested in participating in this program must complete the following:

1. Identify a medical director to oversee the agency's participation in the program.
2. Provide a letter from the service medical director supporting the application and indicating an understanding of his/her role in the Clinical Laboratory requirements and quality assurance process.
3. Complete the NYS Department of Health Clinical Laboratory Limited Laboratory Registration Application (DOH - 4081) for blood testing licensure.
4. Complete the NYS Department of Health Disclosure of Ownership and Controlling Interest Statement (DOH-3486).
5. Complete the HVREMAC BLS Glucometry Application.
6. Develop a Collaborative Agreement with the service medical director that outlines:
 - The use of the NY State Department of Health Basic Life Support Adult and Pediatric Treatment Protocols;
 - The use of the HVREMAC approved BLS Glucometer Utilization protocol;
 - Training Curriculum for the purpose of training all EMT(s) who are participating in the program (See enclosed minimum requirements);
 - Participation in the New York State Department of Health and HVREMAC approved Quality Improvement Plan.
7. Develop written policies and procedures that include the following
 - Training and documentation of authorized users;
 - Documentation of the control testing process;
 - Storage of electronic glucometer and proper disposal of sharps devices;
 - A defined quality assurance program, including appropriateness review by the service medical director.

Additionally, please find enclosed the New York State Department of Health Bureau of Emergency Medical Services Policy Statement 05-04 regarding Blood Glucometry for BLS EMS Agencies.

Completed BLS Glucometer Applications and Collaborative Agreements must be submitted to the Hudson Valley Regional EMS Council Office for review.




New York State
Department of Health
Bureau of Emergency Medical Services

POLICY STATEMENT

Supersedes/Updates: **New**

No. 05-04

Date: Sept. 23, 2005

**Re: Blood Glucometry
for Basic Life Support
EMS Agencies**

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BACKGROUND

At the January, 2005 meeting of the New York State Emergency Medical Advisory Committee (SEMAC), the use of glucometers by Emergency Medical Technicians (EMT) in Basic Life Support (BLS) EMS agencies was approved. The SEMAC approval was granted with the specific condition that the EMS service wishing to use a glucometer at the BLS level, be granted approval by the local Regional Emergency Medical Advisory Committee (REMAC), each EMT complete an approved training program and the service apply and be granted a Limited Laboratory Registration.

The purpose of this policy is to explain the approval process for agencies wishing to implement a glucometry program. The addition of prehospital blood sugar evaluation is intended to assist in the recognition of hypoglycemia and improve the speed with which proper treatment is received.

AUTHORIZATION

Each REMAC, interested in allowing their BLS EMS agencies to participate, will adopt protocols which will allow a basic EMT to obtain a blood sample, using a lancet device, or equivalent and test the blood sample in a commercially manufactured electronic glucometer. The REMAC will also determine the type and level of record keeping and quality assurance required for this procedure.

To be authorized to use an electronic glucometer, the EMS agency must make written request to the local Regional Emergency Medical Advisory Committee (REMAC). The request must include, but not be limited to the following items and possess the necessary Clinical Laboratory authorizations required by Public Health Law.

- Include a letter from the service medical director supporting the request and indicating an understanding of their role in the Clinical Laboratory requirements and quality assurance process.

- Complete the NYS Department of Health Clinical Laboratory Limited Laboratory Registration application (DOH-4081) for blood testing licensure.
- Develop written policies and procedures for the operation of the glucometer that are consistent with local protocol. This shall include at least the following:
 - written policies and procedures for the training and documentation of authorized users;
 - a defined quality assurance program, including appropriateness review by the medical director;
 - documentation of control testing process; and
 - written policies and procedures for storage of electronic glucometer, and proper disposal of sharps devices.

LIMITED LABORATORY REGISTRATION

The law requires that any EMS service testing blood glucose, whether by electronic glucometer or chemstrip, be required to possess a **Limited Laboratory Registration**. In order to obtain the Registration, EMS agencies must complete and submit the following documents:

- **Limited Service Laboratory Registration (DOH-4081)**
- **Disclosure of Ownership and Controlling Interest Statement (DOH-3486)**

The information and appropriate application paperwork is available at:

<http://www.wadsworth.org/labcert/clep/Administrative/ChangeForms.htm>

No EMS service may engage in the testing of blood glucose without a registration permit.

NOTIFICATION

Once the EMS service has received written approval from the REMAC, the EMS Service must provide the Bureau of EMS with a new **Medical Director Verification Form (DOH-4362)**, indicating the Limited Laboratory Registration permit number and authorization by the service medical director.

Medical / Behavioral and
Obstetrics / Gynecology

Lesson 4-4
Diabetic Emergencies /
Altered Mental Status

OBJECTIVES

Objectives Legend

C= Cognitive P = Psychomotor A = Affective

1 = Knowledge level

2 = Application level

3 = Problem-solving level

COGNITIVE OBJECTIVES

At the completion of this lesson, the EMT-Basic student will be able to:

- 4-4.1 List causes of Altered Mental Status.
- 4-4.2 Describe the general steps for emergency care of a patient with altered mental status.
- 4-4.3 Identify the patient taking diabetic medications with altered mental status and the implications of a diabetes history.
- 4-4.4 State the steps in the emergency medical care of the patient taking diabetic medicine with an altered mental status and a history of diabetes.(C-1)
- 4-4.5 Establish the relationship between airway management and the patient with altered mental status.(C-3)
- 4-4.6 State the generic and trade names, medication forms, dose, administration, action, and contraindications for oral glucose.(C-1)
- 4-4.7 Explain the relationship between insulin and glucose.
- 4-4.8 Evaluate the need for medical direction in the emergency medical care of the diabetic patient.(C-3)
- 4-4.9 Define seizures
- 4-4.10 Identify possible causes of a seizure.
- 4-4.11 State the emergency care of a seizure.

AFFECTIVE OBJECTIVES

- 4-4.12 Explain the rationale for administering oral glucose.(A-3)

PSYCHOMOTOR OBJECTIVES

- 4-4.13 Demonstrate the steps in the emergency medical care for the patient taking diabetic medicine with an altered mental status and a history of diabetes.(P-1,2)
- 4-4.14 Demonstrate the steps in the administration of oral glucose.(P-1,2)
- 4-4.15 Demonstrate the assessment and documentation of patient response to oral glucose.(P-1,2)
- 4-4.16 Demonstrate how to complete a prehospital care report for patients with diabetic emergencies.(P-2)

PREPARATION

Motivation: Diabetes is a prevalent disease in American society with estimates between 2-5% of the total population having either diagnosed or undiagnosed diabetes mellitus.

Prerequisites: BLS, Preparatory, Airway and Patient Assessment.

MATERIALS

AV Equipment: Utilize various audio-visual materials relating to diabetic emergencies. The continuous design and development of new audio-visual materials relating to EMS requires careful review to determine which best meet the needs of the program. Materials should be edited to assure meeting the objectives of the curriculum.

EMS Equipment: Exam gloves, stethoscope (6:1), blood pressure cuff (6:1), penlight, tube of glucose, suitable glucose substitute.

PERSONNEL

Primary Instructor: One EMT-Basic instructor knowledgeable in treatment of diabetic emergencies.

Assistant Instructor: The instructor-to-student ratio should be 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in diabetic emergencies.

Recommended Minimum
Time to Complete: Two hours

PRESENTATION

Declarative (What)

- I. Signs and symptoms associated with a patient with altered mental status with a history of diabetes controlled by medication.
 - A. Rapid onset of altered mental status.
 1. After missing a meal on a day the patient took prescribed insulin.
 2. After vomiting a meal on a day the patient took prescribed insulin.
 3. After an unusual exercise or physical work episode.
 4. May occur with no identifiable predisposing factor.
 - B. Intoxicated appearance, staggering, slurred speech to complete unresponsiveness
 - C. Elevated heart rate
 - D. Cold, clammy skin
 - E. Hunger
 - F. Seizures
 - G. Insulin in refrigerator or other medications found at scene.
 1. Diabinese™
 2. Orinase™
 3. Micronase™
 - H. Uncharacteristic behavior
 - I. Anxious
 - J. Combative
- II. Emergency medical care of altered mental status with a history of diabetes.
 - A. Perform initial assessment.
 - B. Perform focused history and physical exam.
 1. Onset
 2. Duration
 3. Associated symptoms
 4. Evidence of trauma
 5. Seizures
 6. Fever
 - C. Performs baseline vital signs and SAMPLE history.
 - D. Determine history of diabetes (medical identification tags) Assure known history of diabetes (medical identification tags), etc.
 - E. Determine if patient can swallow.
 - F. Administer oral glucose in accordance with local or state medical direction or protocol.
- III. Altered Mental Status
 - A. Caused by a variety of conditions
 1. Hypoglycemia
 2. Poisoning
 3. Post seizure
 4. Infection
 5. Head trauma

6. Decreased oxygen levels
 - B. Emergency medical care
 1. Assure patency of airway.
 2. Be prepared to artificially ventilate/suction.
 3. Transport.
 4. Consider trauma, trauma can cause altered mental status.
- IV. Seizures - Seizures are a sudden change in sensation, behavior or movement, usually related to brain malfunction that can be the result of disease, infection or injury to brain tissue. The more severe form of seizures are characterized by violent muscle contractions called convulsions. Epilepsy is a medical disorder characterized by episodic or sudden onset attacks of unconsciousness, with or without convulsions. Status epilepticus occurs when the patient has two or more convulsive seizures without regaining full consciousness.
- A. Chronic Seizures Disorders in children are rarely life-threatening. Seizures of unknown origin, however, including febrile, should be considered life-threatening by the EMT.
 - B. May be brief or prolonged.
 - C. Caused by fever, infections, poisoning, hypoglycemia, trauma, decreased levels of oxygen or could be idiopathic in children.
 - D. Emergency medical care
 1. Assure patency of airway.
 2. Position patient on side if no possibility of cervical spine trauma. Protect patient from injury.
 3. Have suction ready.
 4. If cyanotic, assure airway and artificially ventilate.
 5. Transport.
 - a. Although brief seizures are not harmful, there may be a more dangerous underlying condition.
 - b. Rule out trauma, head injury can cause seizures.
- V. Relationship to Airway Management
Assure that the patient's airway is open and that breathing and circulation are adequate and suction as necessary.
- VI. Medication
- A. Oral Glucose
 1. Medication Name
 - a. Generic - Glucose, Oral
 - b. Trade - Glucose, Insta-glucose
 2. Indications - patients with altered mental status with a known history of diabetes controlled by medication.
 3. Contraindications
 - a. Unresponsive.
 - b. Unable to swallow.
 4. Medication form - Gel, in toothpaste type tubes
 5. Dosage - one tube

6. Administration
 - a. Obtain order from medical direction either on-line or off-line.
 - b. Assure signs and symptoms of altered mental status with a known history of diabetes.
 - c. Assure patient is conscious and can swallow and protect their airway.
 - d. Administer glucose.
 - e. Perform ongoing assessment.
7. Actions - increases blood sugar
8. Side effects - none when given properly. May be aspirated by the patient without a gag reflex.
9. Administer Oxygen

SUGGESTED APPLICATION

Procedural (How)

1. Demonstrate the steps in emergency care for the patient with altered mental status and a history of diabetes who is on diabetic medication.
2. Demonstrate the steps in the administration of oral glucose.
3. Demonstrate the assessment and documentation of patient response.

Contextual (When, Where, Why)

Diabetes is a common disease affecting a large population. As the population ages, the number of people affected by diabetes will increase. Oral glucose given to a patient with an altered mental status and a known history of diabetes can make a difference between development of coma (unconsciousness) and ability to maintain consciousness.

STUDENT ACTIVITIES

Auditory (Hear)

None identified for this lesson.

Visual (See)

1. The student should see audio-visual aids or materials of patients with altered mental status with a known history of diabetes mellitus in the prehospital setting.
2. The student should see the administration of oral glucose (as a simulated paste) to a simulated patient.

Kinesthetic (Do)

1. The student will practice the steps in emergency care for the patient with an altered mental status and a history of diabetes and taking diabetic medication.
2. The student will practice the steps in the administration of oral glucose.
3. The student will practice documentation of assessment, treatment, and patient response to oral glucose.
4. The student will practice completing a prehospital care report for patients with diabetic emergencies.

INSTRUCTOR ACTIVITIES

Supervise student practice.

Reinforce student progress in cognitive, affective, and psychomotor domains.

Redirect students having difficulty with content (complete remediation forms).

EVALUATION

Written: Develop evaluation instruments, e.g., examinations, verbal reviews, handouts, to determine if the students have met the cognitive and affective objectives of this lesson.

Practical: Evaluate the actions of the EMT-Basic students during role play, practice or other skill stations to determine their compliance with the cognitive and affective objectives and their mastery of the psychomotor objectives of this lesson.

REMEDIATION

Identify students or groups of students who are having difficulty with this subject content. Complete remediation sheet from the instructor's course guide.

SUGGESTED ENRICHMENT

What is unique in the local area concerning this topic? Complete enrichment sheets from the instructor's course guide and attach with lesson plan.

BLS Glucometer Utilization Practical Skills Evaluation



BLS
 Glucometer
 Utilization

Pass _____
Fail _____

Candidate _____

Examiner _____

Date _____ Start time _____ Stop time _____

	Possible	Awarded	Comments
Takes or verbalizes body substance isolation precautions prior to performing procedure	C		
Verbalizes indications for use of glucometry	C		
Requests Advanced Life Support (ALS)	C		
Ascertains patient's past medical history including allergies	1		
Selects appropriate site to obtain blood sample and prepares equipment	1		
Explains procedure to patient	1		
Cleanses site with antiseptic solution	1		
Utilizes lancet to pierce skin	1		
Discards lancet in sharps container	C		
Obtains blood sample	C		
Discards test strip in red-bag waste	1		
<i>The examiner advises that the patient's blood glucose is less than 80 mg/dL.</i>			
Confirms patient is conscious and able to swallow	C		
(Verbalized) Administers oral glucose	1		
Reassesses blood glucose after five minutes	1		
Ongoing assessment and transport	1		

Note: Candidate must complete all critical criteria (shaded areas) and receive at least 12 points to pass this station.

Total to pass 12 Total 15

COMMENTS:



BLS Glucometer Utilization

INSTRUCTIONS TO THE CANDIDATE

This station is designed to test your ability to perform BLS glucometry on a patient who has been identified as an appropriate candidate for this procedure. You are on scene with an EMT assistant. The assistant has completed the scene size-up and determined the scene safe. You are responsible for the direction and subsequent action of the EMT assistant. You may use any equipment available in this room. You have 5 minutes to complete this skill station. Do you have any questions?

NOTES



Hudson Valley Regional Emergency Medical Services Council, INC.
Basic Life Support Glucometer Protocol



Considerations

1. It is understood that the New York State “Basic Life Support Protocols” as issued by the New York State Department of Health are always to be initiated in conjunction with this protocol.
2. Altered Mental Status denotes a change in the patient’s mentation from their usual status as defined by:
 - a. Anyone in who is familiar with the patient

-OR-

 - b. The field provider reasonably believes the patient’s GCS is usually 15 and the patient presents with a GCS less than 15.
3. This protocol is indicated for patients:
 - a. Of any age exhibiting altered mental status (AMS);
 - b. Presenting with seizure activity;
 - c. Presenting with signs and symptoms of a stroke;
 - d. Who have experienced a syncopal episode;
 - e. Who have a diagnosed history of diabetes and whose complaints are consistent with signs and symptoms of hypoglycemia.
 - Initiate NYS BLS Medical Protocol M-2 “*Altered Mental Status*”
 - *DO NOT DELAY TRANSPORT TO PERFORM GLUCOMETRY*
 - *DO NOT ADMINISTER ORAL GLUCOSE IF THE PATIENT IS NOT CONSCIOUS, ABLE TO SWALLOW LIQUIDS, OR HAS SUSTAINED A HEAD INJURY*

1. Obtain a field glucometer reading.
2. For documented hypoglycemia (blood glucose less than 80mg/dL):
 - a. Request Advanced Life Support (ALS).
 - b. If the patient is CONSCIOUS AND ABLE TO SWALLOW LIQUIDS, administer oral glucose (19-24grams) or approved equivalent by mouth.
3. Reassess blood glucose after five minutes.
 - a. If blood glucose remains less than 80mg/dL, contact Medical Control and consider administration of additional oral glucose (19-24grams).
 - b. Contact Medical Control to discuss cancellation of responding ALS if blood glucose is greater than 80mg/dL and ALL of the following conditions exist:
 1. The patient is alert with a GCS of 15;

-OR-

For cases where the patient’s usual GCS is less than 15, the patient’s usual level of mentation has been restored.


 2. The patient has a diagnosed history of diabetes.
 3. The patient does not present with any complaints that require ALS intervention.



Hudson Valley Regional Emergency Medical Services Council, INC. Basic Life Support Glucometer Protocol



Medical Control Options

 Oral Glucose	19-24grams
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Considerations

- If after the administration of Oral Glucose, the patient refuses treatment and/or transportation to an appropriate facility, Medical Control must be contacted PRIOR to obtaining the refusal.
- All refusals must be consistent with NYS BLS Special Considerations Protocol SC-5 "Refusing Medical Aid (RMA)".