EMT Advanced Initiative Curriculum

Monitoring Blood Glucose Levels

Lesson Plan
Suggested Time Frames
(Assuming less than 13 students and proper instructor to student ratio)

Lecture portion of course 1 to 1.5 hours
Lab portion of course 1 hour
Evaluation portion of course 1 to 1.5 hours

Reference materials for course development

EMT–Basic Nebraska Curriculum Blood Glucose Modules


Developed for the Kansas Board of Emergency Medical Services by:

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Jon E. Friesen is a captain with Sedgwick County Emergency Medical Service and has been involved in emergency medical services for 25 years, beginning with Hesston EMS as a volunteer EMT, then Paramedic; Newton Ambulance Department as an EMT, Paramedic, Training Officer and Deputy Chief; and Hutchinson Community College EMS Education as Program Coordinator. In his current position with Sedgwick County he is part of the training division with responsibilities in quality analysis and training program development and delivery. Jon continues to teach initial courses of instruction through Wichita State University on a part time basis and has participated in developing a distance-learning model EMT – Basic project with Wichita State University. Jon is the current President of the Kansas Emergency Medical Services Association.
Objectives

Legend for Objectives

C = Cognitive  P = Psychomotor  A = Application

1 = Knowledge
2 = Application
3 = Problem Solving Level

Terminal Objective

Upon completion of this course, the EMT–Basic will demonstrate the ability to perform a blood glucose test on a patient and act appropriately to the findings without compromising the patient’s care or safety.

Cognitive Objectives

At the end of this lesson, the EMT–Basic student will be able to:

1.1 Given case study descriptions, the EMT–Basic will be able to correctly identify those patients in need of blood glucose evaluation. (C–1)

1.2 Given information regarding normal blood glucose levels and the role of glucose in the body, the EMT–Basic will be able to identify reasons for measuring a patient’s glucose levels. (C–1)

1.3 Given information regarding diabetes, the EMT–Basic will be able to define and explain diabetes as to the cause and general effect on the human body. (C–1)
1.4 Given information regarding diabetes, the EMT–Basic will be able to explain the role of insulin in the body and how it affects glucose utilization. (C–1)

1.5 Given class information, the EMT–Basic student will be able to identify and describe the glucometer and its function. (C–1)

1.6 Given the process of blood glucose assessment with a glucometer, the EMT–Basic will be able to identify correctly those body substance isolation procedures and equipment that are required to be used. (C–1)

1.7 Given glucometer information, the EMT–Basic will accurately describe the proper use of the glucometer and the equipment needed for blood glucose testing. (C–1)

1.8 Demonstrate an understanding of the significance of blood glucose test results. (C–1)

1.9 Explain possible critical values for blood glucose in different patients, as defined in the lesson material. (C–3)

1.10 Define Type I and Type II Diabetes, as explained in the course. (C–1)

1.11 Given a patient with high or low blood sugar values, explain the course of treatment appropriate to each patient. (C–3)

1.12 Given information in the course, the EMT–B will explain the contraindications of administering glucose to the patient. (C–3)

1.13 Given course information, the EMT–B will highlight the complications associated with use of a glucometer. (C–1)
1.14 Given course information, the EMT–B will describe possible sources of glucose test errors. (C–3)

1.15 The EMT–B will be able to state the consequence of and the need to recognize a patient with critically high or low panic values. (C–3)

1.16 Given course information, the EMT–B will describe accurately the proper disposal of materials used in blood glucose testing. (C–1)

MATERIALS

AV Equipment  Instructors should have available in the classroom all materials needed for blood glucose testing, as well as for testing accuracy of the blood glucometer. Additionally, AV equipment for projecting PowerPoint slides should be accessible, as well as a marker board, flipchart, or black board as available. Instructors may choose to develop handouts using the PowerPoint media or from other sources of information relative to the topic.

EMS Equipment  Exam gloves and other BSI equipment as determined by local infection control plans, glucometer, regent strips, alcohol wipes, cotton balls, bandages, sharps containers, and other disposal containers. Whenever possible, use the brand of glucometer that the EMT–B students in the course will be using.

PERSONNEL

Primary Instructor  One EMT–Basic or advanced endorsement
instructor with knowledge in basic and advanced blood glucose monitoring techniques.

**Assistant Instructor**
The instructor to student ratio should be no greater than 1:6 for psychomotor skill practice. Individuals used as assistant instructors should be knowledgeable in basic and advanced blood glucose monitoring techniques.

**Time to Complete**
3 to 4 hours
Presentación

Declarativa (What)

I. Anatomía y Fisiología de Revisión

A. Metabolismo celular

1. Glucosa es el combustible para todas las necesidades de energía celular.
2. Otros tejidos pueden usar grasas, también, como combustible; pero son menos eficientes.
3. Metabolito de grasa genera más productos de desecho que glucosa.
4. Para que la mayoria de células utilicen glucosa, hay que tener insulina presente en el torrente sanguíneo.
5. Insulina cambia la permeabilidad de la célula cuando se une, lo que permite que ciertas sustancias “entrarán” que antes no lo habrían hecho. La insulina permite un cambio en la permeabilidad de la membrana celular para permitir que la glucosa entre y se utilice como combustible.

B. Metabolismo de células cerebrales

1. Células cerebrales no necesitan insulina para utilizar glucosa.
2. Por esta razón, el cerebro seguirá funcionando sin niveles adecuados de insulina.
3. Células cerebrales necesitan niveles adecuados de glucosa para funcionar correctamente.
4. Cuando los niveles de glucosa se vuelven demasiado bajos, las células cerebrales cesan de funcionar normalmente y el paciente mostrará cambios en el comportamiento que pueden ser sutiles o extremos.
5. No existe un “valor estable” de glucosa a partir del cual el cerebro empezará a desempeñarse incorrectamente, ya que es inherente y diferente para cada persona.
C. Blood sugar levels

1. There are “normal” ranges for blood sugars in humans.
2. Whether a person is fasting or has eaten will determine the level of glucose in the blood (serum).
3. Normal blood glucose findings are reflective of milligrams per deciliter (US standard) and are reflected as follows:
   a. Infant (40 – 90 mg/dl)
   b. Child <2 Years (60 – 100 mg/dl)
   c. Child >2 years to Adult (70 – 105 mg/dl)
   d. Elderly may see an increase in normal range after age 50 years of age. The American Diabetes Association generally accepts this up to 126 mg/dl.
4. These values represent “normal” findings for blood serum testing; such is done with a blood glucometer or by venous blood testing in a lab.
5. Serum glucose testing is helpful in diagnosing many metabolic diseases. EMT – B personnel will use this to determine if the patient has a condition related to either a low or high blood sugar. This will mostly be done on known diabetic patients, although the test can be used to determine if diabetes or altered blood sugar is the cause of an unconscious – unknown situation.
6. Increased levels of blood glucose can indicate a variety of situations:
   a. Diabetes mellitus
   b. Acute stress response
   c. Cushing’s disease
   d. Diuretic therapy
   e. Corticosteroid therapy.
   f. Pancreatic cancer
   g. Pancreatitis (chronic alcoholics)
   h. Grave’s disease
7. Early mornings can often bring higher glucose levels due to several “overnight” factors including fasting,
hormone/endocrine levels that typically change after midnight, etc.

8. Decreased levels can indicate a variety of situations, as well:
   a. Insulinoma
   b. Hypothyroidism
   c. Addison’s disease
   d. Extensive liver disease
   e. Hypopituitarism

9. The role of the EMT–Basic is to monitor the blood glucose levels and to treat hypoglycemia and hyperglycemia appropriately.

10. Blood glucose testing can identify situations for the EMT–Basic to treat in the pre-hospital setting, as well as provide valuable information for hospital personnel.

D. Types of Diabetes

1. Type I diabetes is a result of little or no insulin production by the pancreas
   a. These patients are most likely insulin dependent.
   b. Often called juvenile diabetes, however it can develop later in life as well.
   c. Patients with Type I diabetes are likely to have complications such as blindness, heart disease, high blood pressure, postural hypotension, kidney failure and nerve disorders.

2. Type II diabetes occurs when the amount of insulin produced by the pancreas is insufficient, or the insulin produced is in sufficient quantity, but is ineffective.
   a. These patients may often be controlled by diet or oral medications.
   b. Less likely to have insulin injections daily.
   c. Less likely to experience hypoglycemia
   d. Often referred to as adult onset diabetes.
e. Patients with Type II diabetes are likely to have complications such as blindness, heart disease, high blood pressure, postural hypotension, kidney failure and nerve disorders.

E. Clinical Presentation of Altered Blood Glucose Levels

1. Hypoglycemia (Low Blood Sugar) BS < Normal

   a. Normal or rapid respirations
   b. Pale, moist (clammy) skin
   c. Diaphoresis (sweating)
   d. Dizziness, headache
   e. Rapid pulse
   f. Normal to low blood pressure
   g. Altered mental status, aggressive, confused, lethargic, or unusual behavior
   h. Anxious or combative behavior
   i. Hunger
   j. Seizure, fainting, or coma
   k. Weakness on one side of the body (may mimic stroke)

2. Hyperglycemia (High Blood Sugar) BS > 200

   a. Kussmaul respirations
   b. Dehydration as indicated by dry, warm skin and sunken eyes.
   c. A sweet or fruity (acetone) odor on the breath, caused by the unusual waste products in the blood (ketones)
   d. A rapid, weak (“thready”) pulse
   e. A normal or slightly low blood pressure
   f. Varying degrees of unresponsiveness.
II. Emergency Treatment of Altered Blood Glucose Levels

A. Some assessment to consider when dealing with the diabetic patient.

1. Assess insulin delivery: Are they currently injecting insulin? Are they taking oral medication? Are they using an insulin pump? (This last device may be implanted and not immediately apparent to the provider. Any emergency room would want to know about a pump in advance.
2. Assess potential for low/high blood sugars: When did they last eat? Have they experienced vomiting? Do they have an illness like influenza or a cold? (Even acute conditions like influenza, colds, etc. can wreck havoc with glucose control. One episode of vomiting and “losing” a meal can trigger low blood glucose levels. Again, these are things that could be relayed to the emergency room during transport.

B. Emergency Care

1. Hypoglycemia
   a. Scene Size Up and Body Substance Isolation as needed
   b. Initial assessment
   c. Determine need for rapid transport
   d. Focused History and Physical Assessment with vitals
      i) Blood Glucose Check
   e. If Blood Glucose is < 80, the patient is responsive and in control of their airway and one or more S/S of hypoglycemia are present, administer oral glucose in accordance with local protocol.
   f. If Blood Glucose is < 80 and the patient has a lowered LOC and no control over their airway, give supportive care and get the patient to advanced life support care for intravenous dextrose or glucagon.
   g. Monitor LOC and blood glucose levels.
h. Supportive care in transport
   i. Detailed and on-going assessments as indicated.

2. Hyperglycemia
   a. Scene Size Up and Body Substance Isolation as needed
   b. Initial assessment
      i) Administer oxygen
   c. Determine need for rapid transport
   d. Focused History and Physical Assessment with vitals
      i) Blood Glucose Check
   e. If blood glucose is > 200, transport to hospital for re-hydration and insulin.
   f. Consider advanced life support if vital signs are compromised

C. Indication for Blood Glucose Monitoring

   1. Altered level of consciousness in any patient.
   2. Shakiness, weakness
   3. Rapid pulse and respiratory rate
   4. Neurological deficit
   5. Seizures
   6. Known diabetic

III. Body Substance Isolation Procedures

   A. EMT-B personnel should refer to their departmental infection control plan for specific needs regarding body substance isolation.

   B. As a rule, EMT-B personnel will need to wear exam gloves for the blood glucometer procedures.

   1. Spurting blood is not reasonable to anticipate.
2. Eyewear, mask, and gown are not indicated for this procedure in most circumstances.

IV. Use of the Blood Glucometer

A. Equipment needed for blood sugar testing with the glucometer.

1. Exam gloves
2. Alcohol prep pads
3. Glucometer
4. Test strips
5. Cotton balls and band-aid
6. Lancets
7. Sharps container and proper waste disposal container

B. Identify the appropriate puncture site

1. Adult and children over 1 year
   a. Fingers, 3rd or 4th on the palmar side
   b. Central fleshy areas
2. Contraindications for the typical puncture site
   a. Old puncture sites
   b. Visible damage
   c. Desire of the patient

C. Preparation of the site.

1. Cleanse with 70% isopropyl alcohol, using a scrubbing/circular motion.
   a. Do NOT use povidone – iodine as specimen contamination may elevate some test results.
2. Allow alcohol to dry.
   a. Failure to allow alcohol to dry may:
      i) Cause a stinging sensation
      ii) Contaminate the specimen
iii) Destroy red blood cells

D. Prepare blood glucometer.

1. Load test strip into the blood glucometer as directed by the manufacturer.
2. Glucometer must be set for the test strip code to ensure an accurate test. This is done PRIOR to the call.

E. Acquire blood specimen.

1. Use lancet to stick the site prepared and form a small drop of blood.
2. Apply blood drop to the test strip as directed by the manufacturer.
3. Allow blood glucometer to process information and return the test result.

F. After test care and procedure.

1. Use cotton ball to hold pressure on puncture site and place band-aid on site.
2. Record blood glucometer reading.

V. Maintenance and Use of Blood Glucometers

A. Set up

1. Blood glucometers come with specific test strips, which are identified by batch number. The number of the test strip must match the number that the glucometer is set for. This is to be done anytime you place a new set of test strips into service. Look at the specific manufacturer’s instructions. Note that test strips expire. Only non-expired strips should be used.
2. Blood glucometers must be routinely tested to ensure that they are properly calibrated and returning accurate results. Follow the specific manufacturer’s directions.

B. Specifics of Blood Glucometers

1. There are numerous types and brands of blood glucometers.  
2. Each one will have specific instructions for:  
   a. The type of test strips to be used.  
   b. The process for setting the glucometer up for use.  
   c. Instructions for testing the glucometer  
   d. Actions that may lead to a false test result  
   e. Cleaning the glucometer  
   f. Memory storage for previous test results  
   g. Battery maintenance

C. Care of the Blood Glucometer

1. Handle with care! Dropping may damage internal components.  
2. Do NOT expose the meter, test strips, code strips or che3ck strips to excessive humidity, heat, cold, dust, or dirt.  
3. Clean with damp cloth. Do NOT immerse or use large amounts of water or cleaner.  
4. Use only those chemicals recommended by the manufacturer.  
5. Store the meter in the case/carrier provided by the manufacturer.

D. Meter and Test Strip Problems

1. Each meter will have specific display numbers that indicate a malfunction. Consult the manual.
2. If the display goes blank during the test, you most likely have a battery failure. Replace batteries often to avoid this possibility.

3. If the function number is different from the number on the test strip, you need to reset the meter. Avoid this by ensuring that when changing batches of test strips, you set the meter correctly.

4. Result of test is “Out of Range”. You may have a bad or damaged test strip or a meter failure. Retry with new test strip. (Another thing that may cause “Out of Range” is if the blood glucose level is out of the meter’s measuring range. Consult the manual.)

5. Meter fails to begin counting down after blood is applied. The blood may have been applied wrong, the test strip inserted incorrectly, or the sample has been applied to the test strip before the meter was “ready” for it. (This can also happen if you do not obtain enough blood for the sample.)

6. Some display segments do not appear. This indicates a faulty LCD screen or an electronics or battery failure.

7. Meter reads “Lo” after blood is applied to the test strip. This may well indicate that the blood sugar is under 20 mg/dl. Ensure that you know what this means on the glucometer you are using. Generally indicates a VERY LOW blood sugar. May also indicate a faulty test strip or a wrong function number (does not match test strip number).

8. Meter reads “Hi” after blood is applied to the test strip. This generally indicates that the blood sugar is above 500 or 600, depending upon the glucometer. Ensure that you know what this means on the glucometer you are using. Generally indicates a VERY HIGH blood sugar. May also indicate a faulty test strip or a wrong function number (does not match test strip number).

9. Blood glucose or control test results are inconsistent, or control test results are not within the specified range. This may be caused by not enough blood or control solution on
the test strip, expired test strips or test solution, deterioration from heat or humidity, or extreme temperatures.

VI. Glucose Administration

A. Names

1. Generic Name is Oral Glucose
2. Trade names include Glutose® and Insta-Glucose®

B. Indications

1. Patients with altered mental status and a known history of diabetes that is normally controlled by medication.
2. Patients in whom the blood glucometer reading shows below normal.
3. In rare cases, direct physician contact may order glucose to patients with a blood glucose reading that is “normal”, but in whom higher levels are normal.

C. Contraindications

1. Unresponsive patient.
2. Responsive patient who is becoming unresponsive and who will lose airway control should encourage caution in administration.
3. Patients who cannot swallow or maintain their airway

D. Actions

1. Increases blood sugar level
2. Is dependent upon adequate levels of insulin for all cells except brain cells.
E. Dosage

1. One tube per protocol is normal dose
2. Physician may order second dose, depending upon post administration blood glucose test levels.

F. Route

1. Oral
2. Between cheek and gum for buccal absorption

G. Side Effects

1. None when given correctly
2. May be aspirated in patients with no gag reflex
3. Can drive blood sugar to high levels. Consider this when administering, but do NOT fail to treat hypoglycemia.

VII. Case Studies

A. Your unit receives a call for an insulin reaction. You find, upon arrival, a 44 year old female patient who presents giddy and nervous. The family states that she is an insulin dependent diabetic who had her insulin today and has not eaten. What are the treatment steps for this patient?
   1. Blood glucometer shows a reading of 40 mg/dl.

B. Your unit receives a call for an unconscious subject. Upon arrival at the business, you find a 22 year old male patient who is supine on the floor and unresponsive. He has vomitus on the floor beside him and around his mouth. He is breathing and has a strong pulse. He has no identification or medic alert tags on him. What are your treatment steps for this patient?
   1. Blood glucometer shows a reading of “Lo”.
C. Your unit receives a call for a traffic crash. Upon arrival you find an elderly patient behind the wheel of a car that has gone off of the road and is up against a tree by a creek. The patient presents unresponsive, but with no specific signs of injury. Vitals are stable except for the decreased LOC, which is found to be responsive to painful stimuli. What are your treatment steps for this patient?
   1. Blood glucometer shows a reading of 22 mg/dl.

D. Your unit responds to a home for the report of a diabetic who if found unresponsive. You find the patient unresponsive and breathing shallow. Skin is warm and dry. Vitals are within normal limits. The patient, a 77 year old female is an insulin dependent diabetic who has eaten today, but it is unknown if she had her insulin. What are your treatment steps for this patient?
   1. Blood glucometer shows a reading of “Hi”.
APPLICATION (LAB)

Procedural (How)

I. Students will experience the following in a lab setting with instructor guidance:
   A. Identify proper sites for blood sampling.
   B. Locate proper sites for blood sampling.
   C. Demonstrate the skill of preparing the glucometer and puncture site for testing.
   D. Assemble the glucometer.
   E. Perform a blood glucose test
   F. Interpret and troubleshoot the glucometer and its readings.
   G. Properly dispose of waste material.
   H. Identify proper treatment for the patient based on findings.
   I. Guidance for the lab portion of the course will be the objectives.

CONTEXTUAL

Basic level EMTs in Kansas have not been given the opportunity to monitor blood glucose levels in the past. With the establishment of new legislation and regulations, the EMT–Basic may now be trained to use the blood glucometer and do so in the performance of care when approved by the local component medical advisor.
STUDENT ACTIVITIES

Auditory (Hear)

1. The student should be able to hear the beep of the glucometer as results are ready to be read.

Visual (See)

1. The student should see the glucometer and all necessary equipment.
2. The student should see audio–visual aids or materials of glucose testing.
3. The preparation of the glucometer.
4. The preparation of the puncture site.
5. The student should see the instructor perform a blood glucose stick.
6. The student should see the results of a glucose stick.
7. The student should see how to record the results in the patient report.
8. The student should see how to dispose of contaminated equipment and supplies.
9. The student should see how to clean equipment.

Kinesthetic (Do)

1. The student should practice the preparation of the glucometer.
2. The student should practice the identification and preparation of the puncture site.
3. The student should practice using the glucometer.
4. The student should practice disposing of contaminated equipment and supplies.
5. The student should practice documenting the results of blood glucose testing.
LAB OUTLINE

I. Demonstration
   A. Instructor demonstrates changing batteries in the blood glucometer.
   B. Instructor demonstrates use of a check strip to check blood glucometer performance.
   C. Instructor calibrates the glucometer to match the test strips.
   D. Instructor performs a control test with the blood glucometer.
   E. Instructor demonstrates a blood glucose test on a volunteer patient and records findings appropriately.
   F. Instructor demonstrates proper disposal of waste materials.

II. Practice
   A. Student demonstrates changing batteries in the blood glucometer.
   B. Student demonstrates use of a check strip to check blood glucometer performance.
   C. Student calibrates the glucometer to match the test strips.
   D. Student performs a control test with the blood glucometer.
   E. Student demonstrates a blood glucose test on a volunteer patient and records findings appropriately.
   F. Student demonstrates proper disposal of waste materials.
EVALUATION

Practical Evaluation

A. The student must demonstrate the proper use of the blood glucometer to analyze a patient’s blood glucose.

   1. Must obtain valid reading.
   2. Must prepare site without contamination.
   3. Must dispose of waste properly.
   4. Must show proper BSI.
   5. Must properly document findings.
   6. No critical errors.
   7. A minimum of 11 points awarded.

B. The student must demonstrate the proper testing of the blood glucometer to for calibration and control testing.

   1. Must perform as specified in blood glucometer manual.

Written Evaluation

A. The student must score no less than an 80% on the written exam.
## Glucose Testing

### Skill/Test Sheet

<table>
<thead>
<tr>
<th>Skill</th>
<th>Possible Points</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Substance Isolation</td>
<td>1 – Critical</td>
<td></td>
</tr>
<tr>
<td>Identify and prepare the site</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gently squeeze the site area</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>At the same time, use the lancet to pierce the skin</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gently squeeze to express a drop of blood</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Operate the glucometer according to the manufacturer’s recommendation</td>
<td>1 – Critical</td>
<td></td>
</tr>
<tr>
<td>Place the drop of blood on the test strip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Place gauze or cotton ball on puncture site and apply pressure</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Apply bandage</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Document glucose results, time of test, and who performed the test</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Dispose of equipment and supplies properly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Clean equipment according to manufacturers directions</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Instructor/Evaluator: __________________________________________</td>
<td></td>
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<tr>
<td>Date: ________________________________</td>
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</tr>
</tbody>
</table>

| Verbalize treatment according to results                  |
| (instructor can alter result to vary appropriate answer) |
| Follow protocols/Contact medical control                  |
| Total Points                                              |
| Pass ☐ Fail ☐                                          |

1
Written Evaluation
Blood Glucose Monitoring

1. In an adult, a blood glucose level of 46 mg/dl is considered:
   A. Low
   B. Normal
   C. High
   D. Midrange

2. Which of the following patients most likely will NOT benefit from blood glucose testing?
   A. Unconscious / Unknown patient.
   B. Cardiac patient with no diabetic history.
   C. Diabetic patient who is well controlled.
   D. Injury accident patient with diabetic history.
   E. B and C

3. Insulin:
   A. Binds with glucose to form an energy reaction.
   B. Changes the glucose so it can be metabolized.
   C. Turns glucose into energy for cells.
   D. Allows glucose to enter cells for metabolism.
   E. Requires ketone bodies to work.

4. The glucometer provides:
   A. A reading of the amount of glucose in the blood stream.
   B. An indication of how much glucose is being used by cells.
   C. A glucose to insulin ratio.
   D. A reading of the amount of glucose in the cells.
   E. A reading of the amount of glucose in the body.
5. When using a blood glucometer, the EMT–Basic needs to use the following BSI precautions:

A. Mask.
B. Eye protection.
C. Gloves.
D. Gloves and hand washing.
E. All of the above.

6. Blood glucose testing provides the EMT–Basic with information to provide proper treatment. Which of the following is NOT true?

A. A blood sugar reading of 20 mg/dl indicates a need for glucose.
B. A blood sugar reading of 120 mg/dl indicates a need for glucose.
C. A blood sugar reading of 20 mg/dl indicates a need for insulin.
D. A and B
E. B and C

7. Type I diabetes generally indicates:

A. That the patient is non insulin dependent.
B. That the patient’s onset of diabetes occurred as an adult.
C. That the patient is controlling their diabetes with diet.
D. That the patient’s diabetes is pregnancy related.
E. That the patient is insulin dependent.

8. The most appropriate treatment for an unconscious diabetic patient with a low blood sugar is to:

A. Link up with advanced life support for intravenous administration of glucose.
B. Administer glucose orally, using care to keep the patient on their side.
C. Administer oral glucose in the cheek area.
D. Give the oral glucose rectally.
E. A or D.

9. Which of the following is a contraindication for the administration of glucose to a patient?

   A. Patient is taking insulin.
   B. Patient has control of airway.
   C. Patient is unresponsive.
   D. Patient did not take insulin.
   E. Patient is on oral medications for diabetes control.

10. Glucometer errors may be a result of:

    A. Battery failure.
    B. Test strip failure.
    C. Wrong calibration of glucometer.
    D. Lack of glucometer maintenance and cleaning.
    E. All of the above.
Written Evaluation MASTER
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6. Blood glucose testing provides the EMT–Basic with information to provide proper treatment. Which of the following is NOT true?

A. A blood sugar reading of 20 mg/dl indicates a need for glucose.
B. A blood sugar reading of 120 mg/dl indicates a need for glucose.
C. A blood sugar reading of 20 mg/dl indicates a need for insulin.
D. A and B
E. B and C

7. Type I diabetes generally indicates:

A. That the patient is non insulin dependent.
B. That the patient’s onset of diabetes occurred as an adult.
C. That the patient is controlling their diabetes with diet.
D. That the patient’s diabetes is pregnancy related.
E. That the patient is insulin dependent.

8. The most appropriate treatment for an unconscious diabetic patient with a low blood sugar is to:

A. Link up with advanced life support for intravenous administration of glucose.
B. Administer glucose orally, using care to keep the patient on their side.
C. Administer oral glucose in the cheek area.
D. Give the oral glucose rectally.
E. A or D.

9. Which of the following is a contraindication for the administration of glucose to a patient?

A. Patient is taking insulin.
B. Patient has control of airway.
C. Patient is unresponsive.
D. Patient did not take insulin.
E. Patient is on oral medications for diabetes control.

10. Glucometer errors may be a result of:

A. Battery failure.
B. Test strip failure.
C. Wrong calibration of glucometer.
D. Lack of glucometer maintenance and cleaning.
E. All of the above.