There was recently a documented case of an inaccurately elevated troponin result being produced by the i-STAT. While the cause of the inaccurate result has not been fully determined, it is likely that specimen quality was a factor. With that in mind, this document and quiz have been created as a review of the specimen requirements and specimen handling techniques required for accurate testing. Failure to abide by these requirements could have very adverse consequences for patient care.

**Instructions from the i-STAT CTnI Procedure (revision 10/2012)**

**SPECIMEN:**

1. Patient Preparation: No special preparation is necessary. Identify patient following

The Nebraska Medical Center Patient Identification Policy RI10.

2. Type: Fresh whole blood or plasma samples collected by arterial puncture or venipuncture in a syringe or an evacuated tube containing lithium heparin and labeled as per The Nebraska Medical Center Laboratory Specimen Labeling Policy TX06.

3. Amounts Required: Approximately 17 uL of heparinized whole blood or plasma

4. Collection: Heparinized whole blood or plasma sample collected in an evacuated tube containing lithium heparin (green top) tube or a syringe (plain or heparinized). Non-heparinized whole blood samples should be transferred to a lithium heparin tube within 1 minute. The heparin tube must be full and must be inverted gently at least 10 times in order to ensure even dissolution of the heparin anticoagulant. Avoid drawing from an arm with an I.V. line.

5. Stability: Test sample within 30 minutes of collection.

6. Unacceptable Specimens: Clotted specimens (even partially clotted), specimens collected with anticoagulant other than lithium heparin, and all other sample types such as urine, CSF or other body fluids are unacceptable. Whole blood from a collection tube that is not full is unacceptable. Grossly hemolyzed specimens may cause inaccurate results and should be avoided. Samples collected by capillary puncture should not be used.

**FILLING THE CTNI CARTRIDGE:**

h. Mix sample well. If using a blood collection tube, invert the tube gently at least 10 times.

i. Attach a 1 or 3 mL plain plastic syringe to a BD transfer device. Insert the well-mixed full tube of

blood into the transfer device and slowly withdraw approximately 0.2 mL of blood.

j. Direct the tip of the syringe into the sample well and slowly dispense the sample until it reaches

the blue fill mark on the label.

k. With the cartridge flat, hold the sides of the cartridge between the thumb and index finger of one

hand and use the thumb of the other hand to slide the plastic closure clip to the right until it locks

in place over the sample well.

l. Slowly and smoothly insert the cartridge into analyzer with the contact pads facing up and toward

the cartridge port.

m. The display will read “Cartridge Locked” during the testing process. Do not attempt to remove a

cartridge while the message is displayed.

n. T**he analyzer must remain on a level surface with the display facing up during testing. Do**

**not move the analyzer during the testing process.**

o**.** The i-STAT 1 analyzer must be cleaned and disinfected between each patient. Clean/disinfect

the analyzer by wiping the exterior surfaces with a 1:10 dilution of bleach or Bleach Germicidal

Wipes. Rinse the analyzer with gauze pads dampened with water and then dry. Avoid getting

excess fluids in the seam between the display screen and the case of the i-STAT. Refer to The

Nebraska Medical Center Disinfection/Sterilization Policy 1C14 for specifics.

**Additional Comments regarding i-STAT specimen collection and cartridge dosing from the Abbott i-STAT 1 System Manual:**

1. Partially clotted samples can result in elevated cTnI results above the reference range, as well as quality check code errors. To prevent this from occurring, upon drawing the whole blood sample into a heparinized collection tube, the sample should be inverted gently at least 10 times to ensure even dissolution of the heparin anticoagulant.

**Additional Comments and reminders from the Point of Care Department:**

1. Only the Support Services lab assistants have been trained on the proper sample handling techniques for the i-STAT troponin analyzer. The lab assistants are responsible therefore for the mixing and transfer of the whole blood specimen from the vacutainer to the syringe and subsequent dosing of the i-STAT cartridge. These steps are not to be handled by Emergency Department staff. The i-STAT cTnI cartridge should not be filled with blood that has not been heparinized. Use of even partially clotted blood could cause falsely elevated results.

2. All boxes of troponin cartridges must be dated with the 14 day outdate when removed from the refrigerator. Do not combine boxes of room temperature cartridges. If a cartridge is removed individually from the dated box (other than a cartridge which is going to be used immediately for testing), the individual cartridge must be dated with the outdate.

3. When using the barcode on the patient chart label to enter the patient ID into the i-STAT, the patient information on the chart label must be confirmed with the patient information on the specimen.

4. Unlabeled specimens are not acceptable for testing.

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