

Holy Family Hospital

A Steward Family Hospital

Manual:	Point of Care Manual
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Procedure: StatStrip® Glucose Meter by Nova

PRINCIPLE:

Glucose is measured amperometrically, using an enzyme based test strip.

SPECIMEN

Type:

- Capillary, venous, arterial, and neonate whole blood

Handling Conditions:

- This method is for analyzing directly from a fingerstick.

EQUIPMENT AND MATERIALS

Equipment:

- Nova StatStrip® Glucose Meter



Materials:

- StatStrip® Glucose Test Strips
Storage Requirements: Store the StatStrip® Glucose Test Strips at 15 to 30° C.
Unopened StatStrip® Glucose Test Strips are stable until the expiration date on the container. Once opened strips are stable for **180** days and the container must be dated in the space provided with updated "Expiration" date.
- StatStrip® Glucose Control Solutions Levels 1, and 3
Storage Requirements: Store the StatStrip® Glucose Control Solutions at 15 to 30° C.
Unopened StatStrip® Glucose Control Solutions are stable until the expiration date on the container. Once opened Controls are stable for 90 days and the bottles must be dated in the space provided with updated "Expiration" date.

Preparation:

- Only the equipment needed will be taken into the patient's room. Leave the supply box outside the patient's room.
- Clean the meter with a non-dripping Super Sani-Cloth disinfectant wipe after each patient. The meter **Must remain visibly wet with the disinfectant for 2 full minutes.** Immediately follow with a dry tissue cloth to remove all cleaning residue.
- **For "Special Contact Precaution" Isolation patients, those on isolation for possible Clostridia difficile or Noro virus, meters will be taken into patient rooms in clear specimen bags. Once out of the room, the meter must be wiped with Clorox Bleach wipe. The meter must remain visibly wet with the Clorox for 4 minutes.** Wipe with a damp cloth afterwards to remove any bleach residue.
CAUTION: DO NOT immerse the meter or hold the meter under running water.
DO NOT spray the meter with a disinfectant solution.

Storage Requirements:

- Store the StatStrip® Glucose Test Strips at 15 to 30° C.
- Store the StatStrip® Glucose Control Solutions at 15 to 30° C.

Safety:

- The battery used in this meter may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100 degrees C (212 degrees F) or incinerate.
- Do not stare into the Laser light or point it towards anyone's eyes while scanning a barcode.

CALIBRATION

The meter does not require calibration.

PROCEDURE:

START UP

1. Press the Power on button or just touch the screen to “wake” the meter.
2. The ENTER OPERATOR ID screen displays. Enter the operator ID or scan the operator bar code. If an invalid ID is entered, the screen displays the invalid ID number with a message “is not a valid ID Try again”.
3. Once a valid ID is entered, press the Accept Key.
4. The Patient Test Screen will now display. The meter is now ready to run QC, Patient tests or review results.
5. All persons allowed to run glucoses must be trained and have completed competency testing. This results in his/her employee ID being entered into Nova/Aegis System and is therefore “Valid”.

QUALITY CONTROL

The StatStrip® Glucose Control Solutions have known glucose values that are used to confirm that the meter and test strips are working correctly. The control solution test results should fall within the range of results pre-set by the lab into the meter. The meter is set up to display results as PASS or FAIL. Two quality control levels, a low level and a high level, must be run for each 24 hours of testing.

1. From the Patient Test screen, press the QC soft key.
2. Most often the strip lot number will display directly below the gray ling. If there is more than one strip lot in use in the hospital you will need to enter the strip lot # by scanning the side of the strip lot vial. Note: The scan is located at the base of the meter.
3. Press the Accept soft key if the lot number is correct.



4. The Enter QC Lot screen displays. Enter the QC lot number by pressing the Scan soft key and then scanning the barcode on the side of the QC vial.
5. If the QC Lot Number is invalid, the screen displays “is not a valid QC Lot, Try again”.
6. The Insert Strip screen displays. Insert a Test Strip as shown on the screen.



7. With the test strip correctly inserted, the Apply Sample screen displays.
8. Gently mix the StatStrip Glucose Control Solution before each use.
9. Discard the first drop of control solution from the bottle to avoid contamination.
10. Place a drop of control solution from the bottle at the end of the test strip until the solution is drawn into the well of the test strip. When enough sample has been drawn into the strip, an audible beep is sounded by the meter. **Always hold the meter horizontally or downward. Never hold it upward, for fluid can run into instrument, shorting it.**

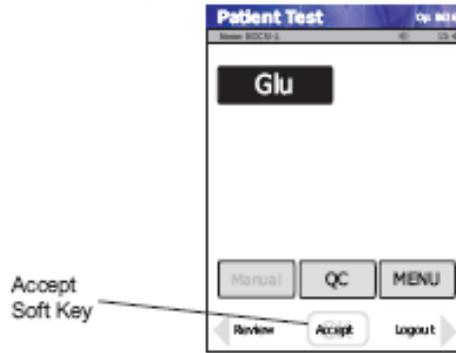


11. Recap the control solution. The Testing Sample screen displays. The screen shows a clock with seconds remaining below the clock.
12. When the meter completes the test, the QC Result screen displays as PASS or FAIL. Patient testing will not be allowed unless both levels (levels 1 and 3) of control results PASS.
13. To add a comment to the result, press the Comment soft key. (See instructions for adding a comment to a patient or QC result).
14. To accept the result, press the Accept soft key.

PATIENT TESTING

Gather all supplies from the glucometer box, including the glucometer. Go to the patient's room. Put on gloves. If an isolation room, place glucometer into clear Specimen bag, which one can scan and touch screen through the bag. Identify patient using two patient identifiers as is the practice throughout the hospital.

1. From the Patient Test screen, press the Accept soft key.



2. The Enter Strip Lot screen displays. Accept the strip lot number as above (or scan the strip lot vial if necessary).
 3. Press the Accept soft key.
 4. The Enter Accn Num screen will display (Account number). Scan the barcode from the patient's wristband. You should see the patient's name, date of birth and location. Verify that this is who you want to be testing. If the account number appears at the top and it states "Is not a valid patient ID Try again", you can touch the "New Patient Override" and proceed with testing. As long as there was an account number, the results will transmit to Meditech.
- Note: Do not scan the barcode from a patient sticker as it does not link to the account number and will not allow the result to cross to EMR. If the patient is Unregistered (as is the case in the Emergency Department, Birthing Center, Radiology), scan the barcode in the supplied spiral notebook and fill in the patient information.
5. The Insert Strip screen displays. Insert a test strip as shown on the meter screen.



6. Select the appropriate site to be punctured. Follow procedure for the collection of blood specimen by skin puncture.
7. Cleans the site with alcohol. Allow site to dry thoroughly after cleaning. Even a small amount of alcohol will alter results.
8. Holding hand downward, massage finger with thumb toward tip to stimulate blood flow.
9. Use the Safety Lancet to puncture the finger.
10. Squeeze the finger to form a drop of blood. Wipe away the first drop of blood. Squeeze the finger again to form a second drop of blood.

11. The Apply Sample screen should be displaying. When the blood drop appears, touch the end of the test strip to the blood drop until the well of the test strip is full and the meter beeps.

WARNING: The test strip must fill completely upon touching the blood droplet. If the test strip does not fill completely, do not touch the test strip to the blood droplet a second time. Discard the test strip and repeat the test with a *new strip*.



13. The test results will appear in 6 seconds.
- NOTE:** Do not remove the test strip while the countdown is in progress.
14. To accept the result, press the Accept soft key.
To reject the result, press the Reject soft key.
To add a comment, press the Comment soft key. After adding a comment, press accept.
All data are stored into memory.
15. Remove you gloves and dispose appropriately.
16. When finished, press Log Out. After 5 minutes, you are automatically logged out. Return the meter to its docking site. This will also log you out.
17. Upon leaving the patient's room, wipe down the meter using a non-dripping disinfectant Super Sani-cloth. The meter must remain visibly wet for 2 full minutes.
18. • **For “Special Contact Precaution” Isolation patients, those on isolation for possible Clostridia difficile or Noro virus, meters must be wiped with Clorox Bleach wipe. The meters must remain visibly wet for full 4 minutes.**

REPORTING RESULTS

The Nova Stat Strip Meter stores test results along with the time and date, operator ID number and patient ID number. Once the test is completed, the operator will then return the Nova Stat Strip meter to its docking station for data downloading to the Aegis computer system. Results then release from the Aegis computer system to Meditech when the meter is docked. All results are reviewed by the Point of Care Department.

Measurement of Elevated Glucose

Although the operating range of the StatStrip Glucose Meter is 10 - 600 mg/dL, the analytical measurement range is 30-500 mg/dL. Any critical result will be displayed in red, as opposed to blue.

- If **HI** is displayed, the blood glucose result is higher than 400 mg/dL. **Repeat the test.** If still greater than 400mg/dl, inform the RN and order a STAT confirmatory venous blood glucose.*

- If **LO** is displayed, the blood glucose result is less 50 mg/dL (less than 45mg/dl for neonates in the Nursery; less than 50 for neonates in Special Care Nursery). **Repeat the test.** If still less than 50 (or 45), inform RN and order a STAT confirmatory venous blood glucose.
 - **Venous Blood Glucoses are not required for Diabetics who have been running high for the past several glucoses.*
 - Whenever a critical glucose is obtained, in addition to running a repeat and/or venous, the operator must enter a Comment Code
 - #1 “Repeat Test”
 - #2 “Inform RN” *
 - #3 “Follow Dr’s orders”.
- *If one informs RN, free-text the initials of the RN.

TROUBLE SHOOTING:

It is the responsibility of the nursing units to make every effort to maintain and trouble shoot instrument problems. Steps to resolve a problem may include:

- Repeating controls, mixing before retesting.
- Repeating a control with a new bottle of control material.
- Clean the glucometer with a saniwipe.
- Remove and place back into the meter the battery.
- Redock the glucometer. If the glucometer docking device does not show lights on in front, check the electrical connectedness of the docking site.
- If the meter freezes, remove the battery and place back in again.

In the event that a meter does not work at all, spare meters are available for swapping. Bring the “broken” meter to the lab clearly marked as “broken”. Fill out a yellow card, take a meter. Once back On your floor, dock the meter and run Quality Control.

*Repetitive Error Codes: When performing a blood glucose on Nova Statstrip, if the same error code is presented upon repeat testing of a patient sample, an alternative blood glucose test method should be performed on that sample/patient.

Reference Ranges:

- The normal range for a fasting blood glucose is 79mg/dl to 117mg/dl. (Merrimack Valley)

CALCULATIONS

The Nova StatStrip® Glucose Meter automatically performs all the calculations.

LIMITATIONS OF THE PROCEDURE:

- If needed, sodium, lithium, and ammonium heparin are the recommended anticoagulants for use with the StatStrip® Glucose Meter.
 - a. Depending on the amount of heparin used in the collection syringe and whether it is filled to capacity with blood, the concentrations of heparin may be 20 I.U. per mL to over 100 I.U. per mL. When liquid heparin is present in excess, it may cause dilution errors.
 - b. A lyophilized lithium heparin giving a final concentration in blood of not more than 20 I.U. per mL is acceptable.
- EDTA, citrate, oxalate, and sodium fluoride are not recommended for use.
- Glucose Interferences:
The StatStrip Glucose Meter exhibits **no** interference from the following substances up to the following concentration levels:

Tested Interfering Substances	Tested Concentration Level
Acetaminophen	10.0 mg/dL
Ascorbic Acid	10.0 mg/dL
Bilirubin	15.0 mg/dL
Cholesterol	500.0 mg/dL
Creatinine	6.0 mg/dL
Dopamine	10.0 mg/dL
Ephedrine	0.9 mg/dL
D(+) Galactose	350.0 mg/dL
Hematocrit (RBC)	30% - 60%
Ibuprofen	48.0 mg/dL
L-Dopa	100.0 mg/dL
D(+) Maltose Monohydrate	240.0 mg/dL
D(+) Maltotetraose	240.0 mg/dL
D(+) Maltotriose	240.0 mg/dL
Methyl-Dopa	1.0 mg/dL
Oxygen	All Concentrations
Salicylate	30.0 mg/dL
Tetracycline	30.0 mg/dL
Tolazamide	15.0 mg/dL
Tolbutamide	45.0 mg/dL
Triglycerides	750.0 mg/dL
Uric Acid	20.0 mg/dL

BIBLIOGRAPHY

1. Burtis, Carl A. and Ashwood, Edward R., ed. 1999. *Tietz Textbook of Clinical Chemistry*. Philadelphia, PA: W. B. Saunders Co.
2. Nova Biomedical Reference and Product Insert.