Skills

Blood Glucose Monitoring: Nova Biomedical StatStrip Meter

Quick Sheet

> ❗ FHA Procedure

Related Resources: Adult Hypoglycemia Protocol

PURPOSE:

This procedure provides information on performing point of care testing (POCT) for blood glucose monitoring.

POLICY: LABORATORY POLICY ON POCT

1. The blood glucose POCT can be ordered by the healthcare provider (within their professional scope of practice) where there is a proven medical need.

2. All health care staff performing Blood Glucose Monitoring must demonstrate competency by successfully completing the Blood Glucose Meter - Nova Biomedical StatStrip® training and competency requirements. Upon completion, staff must complete and electronically submit their Health Authority's Blood Glucose User ID Request and Renewal Form.

3. To maintain access to the glucose meters, annual competencies are required for all personnel. This includes successful completion of the following on a yearly basis:

   - 3 patient and/or simulated (fake blood) tests

   - 1 set of High/Low QC (level 1 & 3)

   - The Nova Biomedical StatStrip® Blood Glucose Meter Quiz on LearningHub

PROTOCOL:

- Blood glucose monitoring shall be performed:

  - On a physician's order

  - STAT when a diabetic emergency is observed - Focus on treating patient's symptoms, not the meter.

- Critical Care Units obtain blood samples using a consistent method for each patient.

  Preference for sampling is:

- **First -** arterial line

- **Second -** central line

- **Third -** capillary puncture

PATIENT ASSESSMENT AND PREPARATION:

1. Review glucose monitoring order for time and frequency of measurement, and/or PRN.

2. Determine if capillary blood glucose meter testing is appropriate.

3. Determine the correct time for sample collection (e.g., with fasting, before/after meals, after certain medications, or before insulin doses).

4. Explain risks to patient/family when performing skin puncture, in conditions such as low platelet count, anticoagulant therapy, bleeding disorders.

5. Assess understanding of procedure and purpose and gain informed consent.

6. Assess the area of skin to be used as a puncture site. Avoid areas of bruising, infection, edema, scarring, rashes and open lesions.

IF ...	THEN ...
Patient has a Low or High Hematocrit. (<20% or >70%)	Glucose meter testing will provide inaccurate results. - Notify Physician - Lab Glucose is indicated
Patient has decreased peripheral blood flow. (i.e. circulatory problems, shock, administration of vasoactive agents, hypotension, dehydration, or other factors affecting peripheral circulation)	Glucose meter testing may provide inaccurate results. - Prepare site by warming, if appropriate.

	• Testing by another method may be indicated (i.e. Lab glucose).
Patient is known (or clinically indicated) to have:	Glucose meter testing will cause inaccurate results (falsely elevated) Lab serum (plasma) Glucose may be indicated.
• High Galactose D(+) level: > 27.75 mmol/L • High Triglyceride level: > 16.9 mmol/L • IV administration of Ascorbic Acid, with a blood level >1.278 mmol/L	
Blood sample is arterial or venous Note: Avoiding capillary sampling by removing whole blood from a vacutainer tube drawn by venipuncture is not acceptable practice	There can be physiological variation between capillary, venous and arterial blood. Arterial and capillary samples have similar values if perfusion is optimal. Venous samples may be up to 20% lower.
Not collecting a capillary sample	Document in chart, source of the sample, and that a discard occurred when necessary. Do not collect a blood sample from an indwelling line that has a solution containing glucose.

Procedure for Performing Blood Glucose Monitoring using Nova Biomedical StatStrip[®] **Meter:**

1. Perform hand hygiene.

2. Verify correct patient using two identifiers.

3. Scan correct Staff ID (operator).

4. Scan patient ID or enter manually for long term care (LTC) sites.

5. Collect equipment and gather supplies.

6. Remove the meter from the docking station, or, it meter was not in docking station, tap the screen so "Welcome" screen appears.

   • Touch screen is very sensitive so only use your finger, never use a pen or any other hard objects

7. Ensure meter is functional, QC not due, battery is charged, and test strips have not exceeded use past the discard date.

   - Note: If QC is required, a padlock symbol will appear next to the "GLU" icon on the "Patient Test" screen.

   - Laboratory (not Biomed) provides trouble-shooting support to units and replaces meters that are not functioning.

8. Press the "Login" soft key to begin.

9. Enter your operator ID number (employee ID number) and press "Accept." An abbreviated form of your ID information will appear at the top right-hand corner of the screen once you have successfully logged in.

   - Alternatively, scan the operator ID by pressing and releasing the "Scan" soft key once time, with the barcode 4 inches from the scanner. **Operators are responsible for their own barcode; Laboratory does not provide barcode support.**

10. Press "Accept" after the ID is scanned.

    - Note: **Do not** point the laser light towards anyone's eyes while scanning a barcode.

11. From the "Patient Test" screen, press "Accept" to run a patient test.

12. Scan the test strip lot number; press "Accept."

13. When the "Enter Patient ID" screen appears, scan the patient ID barcode on the patient's wristband. If the barcode is not available, manually enter the patient ID using the keypad and press "Accept."

14. When "Insert StatStrip" screen displays on the meter, **insert the gold end of a test strip into the strip port of the lower end of the meter, with blue side facing upwards. Strip must be in the meter before dosing.**

15. Perform hand hygiene and don clean gloves.

16. Choose puncture site.

    - Neonatal/Infant up to one year:

      - Lateral and medial planter surface of the heel.

    - Child greater than one year and Adult:

      - Select the lateral side of the middle or ring finger, avoiding the central tip of the finger which has a denser nerve supply.

      - Index finger may be used as an alternative site.

      - Do not use the thumb or fifth finger (pinky).

      - Do not attempt to puncture a swollen, bruised, or previously punctured site.

17. Prior to obtaining a capillary blood glucose sample, ensure that puncture site is clean and free of contaminants.

- For children greater than one year and Adults, use appropriate antiseptic swab (e.g. alcohol swab) to clean site.

- For LTC patients, use soap and water.

- For neonates, use non-CHG swab or soap and water.

18. When "Apply Sample" screen displays, collect sample:

- For neonates up to one year, follow Heel Stick (Maternal-Newborn/Neonatal Procedure).

- See further information on new lancets (see illustrations tab):

  - Domrex Pharma Flex 3

  - Domrex Pharma Sterilance Flex 3

- Clean patient's finger and perform a puncture according to hospital protocol using a single-use lancet.

- **Wipe away the first drop of blood.**

- Apply the second drop of blood to end of the test strip; maintain fluid contact with blood drop until analysis countdown begins on screen.

- Keep the meter level during test cycle to avoid dripping blood into the strip port.

- Must apply sample in one continuous dose to avoid "Flow Error."

19. Results appear in 6 seconds.

20. Apply gauze and add pressure to the puncture site until bleeding stops.

21. Interpret Results: Follow the patient's plan of care. Abnormal results are indicated by an arrow pointing up (High) or down (Low). Double arrows indicate critical results. Follow-up critical results as per regional protocol(s).

- If comment is needed, press the "Comment" soft key before accepting the result; select the desired comment by touching it on the screen, then choose "Accept."

- Note: Up to three comments may be selected, which will be linked with the glucose result. There is also a free text soft key if a unique comment is warranted.

22. Select "Accept" soft key to return to the "Patient Test" screen.

23. Remove strip.

24. Discard supplies: dispose of the lancet in the sharps container.

25. Clean meter using FHA approved cleaning wipes after every patient test by referring to the Disinfection Guide.

- Note: Do note get fluid into the docking port, test strip port or barcode scanner.

- Allow to air dry.

26. Remove gloves and perform hand hygiene.

27. Document results on patient's permanent health record. Indicate if the sample is from arterial or venous source when a capillary sample is not used.

- Document actions taken.

- Document date, time and employee initials.

28. Return the meter to the docking station for battery charging and data uploading.

EXPECTED OUTCOMES

- Puncture site shows no evidence of bleeding or tissue damage.
- **Results Show:**

	Normal Range (mmol/L)	Critical results (mmol/L)
Neonatal patients	2.6 – 7.0 mmol/L	< 2.0 mmol/L
(≤ 28 days)		> 20 mmol/L
Pediatric patients	3.3 – 7.0 mmol/L	< 2.6 mmol/L
(> 28 days to 17 years less a day)		> 25 mmol/L
Adult patients (17 years of age and older)	4.0 – 7.0 mmol/L	< 2.8 mmol/L
		> 25 mmol/L

UNEXPECTED OUTCOMES

- Puncture site is bruised or continuous to bleed.
- Blood glucose result does not correlate with clinical picture.
- Glucose meter malfunctions.
- Patient expresses misunderstanding of procedure and results.

PATIENT EDUCATION

- Provide patient and/or family with FH diabetes resources (e.g. outpatient services).

- Provide information about where patient with diabetes can obtain testing supplies, if applicable.

- Instruct patient in what to do and whom to contact if glucose meter malfunctions.

- Stress the importance of testing glucose level, particularly in diabetic patients.

Procedure for Performing Quality Control (QC) test using Nova Biomedical StatStrip® Meter:

1. Collect Equipment and prepare supplies. Ensure that QC solution has not been in use for more than three months, and that the test strips have not been in use for more than six months.

2. Remove the meter from the docking station.

3. Ensure meter is functional, and battery is charged.

   - Note: If QC is required, a padlock symbol will appear next to the "GLU" icon on the "Patient Test" screen. QC may be run any time, whether or not QC is due.

   - Laboratory (not Biomed) provides trouble-shooting support to units and replaces meters that are not functioning.

4. Press the "Login" soft key to begin.

5. Enter you Operator ID number (employee ID number) and press "Accept." An abbreviated form of your ID will appear at the top right-hand corner of the screen once you have successfully logged in.

   - Alternatively, scan the operator ID barcode by pressing and releasing the "Scan" soft key one time, with the barcode 4 inches from the scanner.

   - Press "Accept" after the ID is scanned.

   - **Operators are responsible for their own barcode; laboratory does not provide barcode support.**

   - **Do not** point the laser light towards anyone's eyes while scanning the barcode.

6. Press the "QC" soft key from the "Patient Test" screen.

7. Follow prompts on the dialogue bar on the top left corner of the meter screen.

8. Scan the test strip vial; press and release the "Scan" key, then press "Accept."

9.   Scan the QC vial, then press "Accept."

10.   When the "Insert Strip" screen displays on the meter, **insert the gold end of a test strip into the strip port on the lower end of the meter, with blue side facing upwards.** Strip must be in meter before dosing.

11.   When "Apply Sample" screen appears, the meter displays which level of QC was scanned and is to be analyzed.

12.   **Gently mix the QC solution by inverting 10 times slowly.** Be sure that the QC solution is not expired by checking the in-use expiration date.

   - **Both levels must pass before you can proceed to patient testing. All levels of QC must be run after every QC failure and at least once every 24 hours.**

13.   Place the meter on a flat, horizontal surface.

14.   **Discard the first drop of QC solution.**

15.   Apply QC solution to the white end (not top) of the test strip; maintain fluid contact with the end of the strip until the 6-second countdown begins.

   - Be sure to apply the sample in one continuous motion. Do not double dose.

16.   Results will appear within 6 seconds which automatically stores in meter memory with a date/time identifier.

   - Keep the meter horizontal until the test strip is removed to prevent QC solution from running into the meter.

If	Then
Pass	Accept and continue to next level QC or to patient testing
Fail	Select appropriate comment
	Repeat QC test. Open new vial QC or test strips if necessary
Repeated QC fails	Meter is not usable
	Contact Laboratory Point of Care Coordinator (M-F 0800 – 1600) for troubleshooting support
	Loaners are available from Laboratory upon request

17.   Discard supplies.

18. Disinfect meter with regard to the Disinfection Guide.

19. Return the meter to the docking station for battery charging and data uploading.

Please See Extended Text for a guide to:

REPLACING THE BATTERY

CLEANING THE METER

COMMON ERROR MESSAGES & TROUBLESHOOTING

CHARGING THE METER

LOGGING OFF

METER TRANSFER TOTE INFORMATION

References

1. Nova Biomedical Corporation: *StatStrip*® *Glucose Meter Instructions for Use Manual,* 2018.

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