Saskatoon Health Region	POLICIES & PROCEDURES Title: **BEDSIDE GLUCOSE MONITORING (BGM)** I.D. Number: **1150**
Authorization: [X] SHR Nursing Practice Committee	Source: Nursing Cross Index: SHR Infection Prevention & Control Manual #20-10; SHR RegionalPolicies & Procedures Manual #7311-60-017 Verification of Patient/Resident/Client Identification Before the Initiation of Treatment, Procedure or Therapy: SHR Nursing Policy & Procedure Manual #___ Insulin Administration-Adult Date Revised: January 2013 Date Effective: January 2000 Scope: **SHR Affiliates & CBOs**

Any PRINTED version of this document is only accurate up to the date of printing 20-Mar-13. Saskatoon Health Region (SHR) cannot guarantee the currency or accuracy of any printed policy. Always refer to the Policies and Procedures site for the most current versions of documents in effect. SHR accepts no responsibility for use of this material by any person or organization not associated with SHR. No part of this document may be reproduced in any form for publication without permission of SHR.

Definitions:

Bedside Glucose Monitoring (BGM): point of care glucose testing.
Operator/User: Health Care Providers certified in the use of the bedside glucose monitor.
Point of Care (POC) Testing (POCT): any diagnostic laboratory test that occurs within a facility but outside the physical space of the laboratory.
Point of Care Coordinator (POCC):designated by Laboratory Services. The POCC monitors day to day operations of the Point of Care Program.
Quality Control (QC) Testing: process which confirms the meter is working properly.

Bedside Glucose Monitoring Values:

Reportable Range(range the meter is able to report) 0.6 to 33.3 mmol/L

Interferences and Limitations:
Glucose results can be affected by:

- Triglyceride values greater than 20.3 mmol/L may produce elevated results
- Hematocrit values should be between 10% and 65%for adults, between 23% and 58% for neonates.
- Galactose values greater than 0.83 mmol/L will cause overestimation of blood glucose results
- Intravenous administration of ascorbic acid resulting in blood concentrations of ascorbic acid greater than 0.17 mmol/L will cause overestimation of results
- Situations with decreased peripheral blood flow – hypotension, shock, and possibly diabetic ketoacidosis
- Testing with capillary blood obtained from unwashed hands

1. PURPOSE

1.1 To safely monitor a patient's blood glucose level using capillary samples.

1.2 To ensure accurate BGM through proper quality control processes.

2. POLICY

Mandatory requirements for Users to perform POC BGM	• Participation in an educational session. • Successful completion of the certification exam. This information will be docoumented and forwarded to the POCC prior to user performing POC testing. • Knowledgeable of the approved policy and procedure. • Yearly, each user must review and pass a recertification exam. Failure to do so will result in the user being inactivated and unable to perform BGM. • Each operator will be monitored by software to determine if they have performed **both** QC and BGM within a twelve month period.
Operator Identification (ID)	• Following successful certification, each user will be given an unique operator ID. This ID must be entered to BGM and QC. • Users will not allow others to use their ID to access the meter.
Physician Order	• Required for regularly scheduled BGM. BGM will be done one half hour prior to meals and evening snack (preprandial) unless otherwise ordered or indicated. ***Note**: BGM will be performed without an order when indicated by unit standard or as dictated by a patient's condition.*
Critical Values	• When a patient test is outside the critical range, the BGM must be repeated. If it remains outside the critical range, a serum blood glucose must be drawn and sent to the lab, and the physician must be notified.
Infection Prevention & Control	• Routine Practices must be adhered to when performing POCT. • Non-sterile gloves must be worn when conducting a test and cleaning the meter. • Meter must be cleaned after each patient use. See 3.6.1 • Base unit must be cleaned weekly. • See 3.6.3 for steps to follow when cleaning meter for patient on precautions.
Quality Control	• Both Level 1and Level 2 QC tests must be performed once in a 24 hour period or QC Lockout will occur. A lockout prevents further testing. • Additional QC testing **must** occur when - Meter is dropped or exposed to extreme temperatures, humidity, heat, etc - cap left off test strip vial - new lot of strips opened - operator wants to confirm technique - questionable patient results are displayed - new meter
Special Considerations	• The Academic Institution will be responsible for training faculty and students on the use of the meter. Faculty and students will use the meter after successful completion of the certification process. ***Note:** Faculty will be responsible to train and certify the students they supervise. Student ID's will be provided by the POCC*

3. PROCEDURE

3.1 Powering up and Entering Operator ID

3.1.1 Press the power on/off button located below the center of the touch screen.

3.1.2 Meter will perform a self check and will proceed to the the Operator ID screen in a few seconds. Or, you may press √ to proceed.

3.1.3 Enter your Operator ID manually or by scanning your barcode.

3.2 Manual Entry:

3.2.1 Press number(s) of your operator ID on the touch screen.

3.2.2 Press the √ to progress to the next screen.

3.3 Bar Code Scanning:

3.3.1 Press the Scan button (barcode symbol) on the upper right corner of the screen.

3.3.2 The black backlight of the scan button indicates that the scanner is activated.

3.3.3 Position the scanning beam approximately 4-8 inches from your operator ID barcode. A beep indicates a successful scan of the barcode and the Main Menu screen will be displayed.

Note: *Your name will be displayed in the lower left area of the screen*

3.4 Performing a Patient Test

3.4.1 Gather equipment

- Accu-check Inform II Glucose Meter, and test strips
- Single use lancet
- Non sterile gloves
- Equipment for washing and dryng patient's hands

3.4.2 Prepare for glucose testing

3.4.2.1 Wash hands and put on gloves.

3.4.2.2 Remove meter from docking station and press On/Off button to power on meter.

3.4.2.3 Cleanse patient's finger with soap & water & dry thoroughly.

3.4.2.4 Press the Patient Test button from the Main Menu. Press the √ to bypass entering Patient ID.

3.4.2.5 Select the strip tests vial barcode when prompted or scan the barcode found on the vial container. (See bar code scanning #3.3)

3.4.2.6 Remove test strip from vial. When strip icon appears on monitor display, gently insert gold connection part of the strip into the meter. The yellow target area must be facing up.

Note: *Small arrows on the strip indicate the correct end to insert into meter*

3.4.2.7 Using a lancet, puncture finger & **wipe away the first drop of blood**

3.4.2.8 Wait for the flashing drop to be displayed on the monitor then:

3.4.2.9 Add the second drop of blood to the front edge of the test strip. The blood will be drawn into the strip automatically.

3.4.2.10 Ensure the yellow window is completely filled with blood and no yellow is visible. A very small volume of blood (0.6µL) is required.

***Note**: Never place the drop of blood on top of the the strip.*

***Note**: Results may be affected if excessive squeezing of the finger is used to obtain the blood sample.*

3.4.2.11 Once the test is complete the Patient Result Screen is displayed. Results will appear in approximately 5 seconds.

3.4.2.12 If "Out of Range" or Critical Result" is displayed, a result comment is required as below:

Patient Comments:

Plasma Gluc sent to Lab: – this comment indicates that the lab draw for glucose testing has also been ordered

Patient misidentified: – this will flag a result as invalid in the electronic database

Procedure Error - this will flag a result as invalid in the electronic database

Dr Notified – Indicates the doctor has been notified of the result

Repeat to confirm: – indicates that this is a recheck of a previous patient glucose

Nurse Notified: – indicates that the test was done by a CCA, and the nurse will be notified of the test result immediately

Stat Tests:

- in SHR, the ACCU-CHEK Inform II is configured to allow 2 STAT tests to be run on the instrument in a 24 hour period when a QC request is outstanding.
- The Stat option can only be used if the number of stat tests (2) available have not been exceeded
- The instrument will offer the option of "Run STAT" or "Run QC".
- Choose Run STAT – follow the patient test process.
- Choose Run QC – follow the Quality Control process.
- Only use in critical patient situations – "true stats"
- QC must be run as soon as possible after stat testing

3.5 Performing Quality Control (QC) Test

3.5.1 Turn meter on and enter operator ID.

3.5.2 Press Control Test from the Main Menu.

3.5.3 Scan the barcode on the level 1 vial.

3.5.4 Scan the current strip lot number when prompted.

3.5.5 Insert a test strip into the meter when prompted.

3.5.6 Mix the control solution well. Wipe tip before use.

3.5.7 Once the flashing drop appears, add the appropriate level of control solution to the edge of the test strip.

3.5.8 Once the test is completed a PASS or FAIL will be displayed on your screen. If a FAIL is displayed press comment button to display the preprogrammed comments. Select the appropriate comment as below:

QC Comments:
Incorrect QC vial
Will Repeat
Repeated
Expired QC Solution
New Test Strip Pkg
New QC Vial

3.5.9 If Quality Control fails proceed with the following steps:
- 3.5.9.1 Check the expiry date on the quality control solution, and the date the bottle was opened. Repeat the quality control
- 3.5.9.2 If the QC result still fails try a fresh vial of control solution
- 3.5.9.3 Rerun QC and if it fails again open a new vial of test strips and rerun the QC
- 3.5.9.4 If the QC is still not acceptable contact the Point of Care team in laboratory services

3.5.10 When the QC test result is PASS, press the √ button to complete the test.

3.5.11 Remove strip

3.5.12 Repeat above steps for level 2 control solution.

3.6 Cleaning & Maintenance

3.6.1 Clean meters by wiping the entire meter with an approved anticeptic wipe between patients. Be sure liquid does not enter the strip slot or collect on the connectors.

3.6.2 Clean the base weekly with an approved anticeptic wipe . Dry the base completely after cleaning. Ensure the wipes are not too wet to prevent collection of fluid on the connectors which can damage them.

3.6.3 When a patient is on precautions you can take the meter into the room and follow the steps below after the patient test:
- 3.6.3.1 Leave the meter in the room on a flat surface near the door
- 3.6.3.2 Remove PPE in the usual manner
- 3.6.3.3 Do Hand Hygiene
- 3.6.3.4 Donn clean gloves and take an approved antiseptic wipe
- 3.6.3.5 Go back into room, get meter and wipe it down
- 3.6.3.6 Take the clean meter out of the room and place it on a clean surface
- 3.6.3.7 Remove gloves and do Hand Hygiene
- 3.6.3.8 Place meter into the base

3.7 Reporting/documentation

3.7.1 Record patient result on appropriate BGM record.

3.7.2 **Report any abnormal results to the physician**.

3.7.3 **In Rural Facilities** when a critical value occurs, the physician on call will be notified if lab is not on site.

3.8 Troubleshooting

Problem	Action
1. If the meter will not turn on:	The Battery may need to be charged. Place the meter in the docking station and leave for at least 15 minutes.
2. Meter will not respond:	Placing the meter in the docking station will reboot and restart the meter.
3. If the docking station is flashing red or has a red light for an extended period of time:	It may be caused by a download error on the meter. Unplug the docking station and plug it back in to re-establish connectivity
4. If the glucose meter is not working:	Contact the Point of Care Coordinator at 655-2166 between the hours of 0730 and 1600. Outside regular hours a meter may be borrowed from another unit, or a loaner can be obtained from the lab.
5. If you experience problems with meter connectivity or problems with the scanner:	Wipe the meter with a clean cloth dampened with clean water only.
6. If your user ID or bar code does not work:	Have you completed training and certification? Has your training checklist and quiz been submitted to Point of Care? Check to see if your employee number is correct. Attempt to login manually. If you are not able to login either way, contact the Point of Care Coordinator by email: pointofcare@saskatoonhealthregion.ca to see if you have been activated in the database.

4. REFERENCES

CLSI Guideline, C30-A2 Point of Care Blood Glucose Testing in Acute and Chronic Care Facilities; Approved Guidelines – Second Edition 2002

ISO 22870 Point-of-Care testing – Requirements for Quality and Competence 2009

Qmentum Program 2010 Standards Point of Care Testing version 5

Roche Diagnostics Ltd. Package Insert 2011, Accu-Check Inform II, Performa Test Strips and Performa Control Solutions

Roche Diagnostic Ltd, ACCU-CHEK Inform Blood Glucose Monitoring System, Operator's Manual. Last update 2010

RELATED DOCUMENTS

Point of Care Testing

Glucose Meter Monthly Lab Comparison