CentraCare Health (CCH) adopts the following policy/procedure for:
St. Cloud Hospital

Original: 5/02 Minor Revision: Full Review: 1/15
Replaces: 1/12
Responsible Person:
Responsible Person: Point of Care Laboratory Specialist
Approving Cmte: Clinical Nurse Practice Committee
Category: Patient Care
Cross Reference: Patient Identification policy
Type: Procedure

I. PURPOSE

To provide on-site measurement of blood glucose. The results are in mg/dl glucose in capillary, arterial or venous whole blood and will be used to:

A. Provide provider with information necessary to adjust insulin and/or oral hypoglycemic.
B. Assist the nurse in assessing the patient, along with symptoms of hyper-hypoglycemic episode.

II. POLICY

A. Blood glucose testing will be performed by patient care staff
B. To be competent in the procedure patient care staff will complete initial training with a designated trainer. This will consist of hands-on training and completing the validation checklist. To remain a valid operator, competency will be assessed with review of the validation checklist and the procedure on an annual basis.
C. Two levels of quality control (QC) tests will be done each day of patient testing. If testing is not done for a day, documentation such as “not in use” or “no patients tested” must be made for that day on the quality control log sheet. Repeat QC tests will be done:
    1. if a patient test has been repeated and the blood glucose results are still lower or higher than expected
    2. when troubleshooting the system.
    3. If the meter is dropped.
D. When patient care units are having problems with a meter, Lab will be called as a guide for troubleshooting and maintenance. Do not send the meter to Clinical Engineering. A MDFR will be filled out by Laboratory.
E. A provider is required for blood glucose testing.
F. Capillary blood may be obtained from puncturing the fingertip or heel using approved lancets. Fresh whole blood – capillary, venous, arterial, and neonatal blood may be used. Venous and capillary blood may differ in concentration by as much as 70 mg/dL, depending on the time of blood collection after food intake. Shock, administration of vasoactive agents, and other factors affecting the peripheral circulation may also cause discrepancies between venous and capillary glucose results.
G. When not analyzing from a lancing device, whole blood should be analyzed within 30 minutes of collection. Storing samples on ice is not recommended. Sodium, lithium, and ammonium heparin are the recommended anticoagulants when sampling with syringes or vacutainer tubes.
H. Any neonate glucose value above 200 mg/dL will be verified with laboratory serum/plasma glucose. For all other patients, a meter reading below 50 or above 400 mg/dL is a critical value and will be verified with laboratory serum/plasma glucose.

The provider will be notified when blood glucose levels are critical. Patient care staff will initiate a lab order for a STAT glucose.

III. STANDARD OF PRACTICE

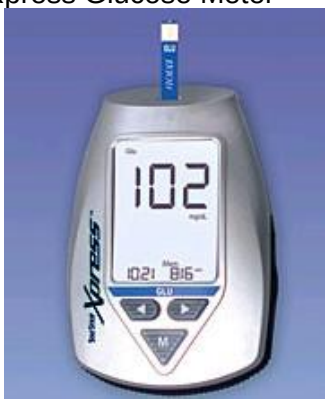
Patient care staff is responsible for obtaining, reporting, and treating blood glucose as indicated.

IV. OUTCOME STANDARDS

Patient can expect blood glucose to be monitored and treated pre provider order.

V. PROCEDURE

A. Nova StatStrip® Xpress Glucose Meter



B. Quality control and cleaning
   1. Clean the meter
      a. ***It is preferred to*** clean the meter with a cloth that has been dampened with a 10% bleach solution ***or see manufacturers approved cleansing solution list.*** Immediately follow with a water-dampened cloth to remove all cleaning residue. Dry thoroughly with a soft cloth or lint-free tissue. CAUTION: DO NOT immerse the meter or hold the meter under running water. DO NOT spray the meter with a disinfectant solution.
      b. The outside of the meter/tote must be cleaned between each patient using a approved disinfectant wipe.
   2. Running a QC Sample
      a. Insert a test strip into the meter, gold tip in. All segments of the screen will display for 2 seconds. Then a flashing blood drop will display.
      b. Identify the sample as a Control; use the Left or Right button to find the desired control level: C1, or C3.
      c. Touch the end of the test strip to a drop of control solution until the test strip fills and the meter beeps.
      d. Glucose quality control test results are available on-screen in 6 seconds. WARNING: Do not test patient sample until a control solution test result is within expected range. NOTE: Acceptable control assay ranges are printed on the Nova Glucose Control Solutions vial label. If a QC test does not fall within the specified range, verify that the Nova Glucose Stat Strips and Control Solutions are not past their expiration dates. Repeat the test with a new strip

C. Storage Requirements
   1. Store the StatStrip® Glucose Test Strips at 15 to 30° C. Opened bottles of strips are good for 180 days after opening.
   2. Store the StatStrip® Glucose Control Solutions at 15 to 30° C. Opened bottles of

control vials are good for 90 days after opening.

D. Running a Patient Sample
   1. Insert a test strip into the meter, gold tip in. All segments of the screen will display for 2 seconds. Then a flashing blood drop will display.
   2. Prepare the puncture site: Use alcohol pads to clean area. Alternatively, use water to wash the patient's hand; dry thoroughly after cleaning.
   3. Using a hospital approved safety lancet, puncture the finger (not on the pads of the finger) or heel.
   4. Squeeze the site to form a drop of blood
   5. Wipe away the first drop of blood to prevent testing a contaminated drop of blood.
   6. When the blood drop appears on the end of the finger, touch the end of the test strip to the blood drop until the test strip fills and the meter beeps.
   7. The on-screen blood drip flashes on and off repeatedly until sufficient blood has been added to the test strip.
      a. 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.
      b. When applying the sample to the strip ALWAYS point the test strip downwards to avoid blood running into the meter.
   8. The glucose results will appear in 6 seconds. Do not remove the test strip while the countdown is in progress.
   9. Remove the test strip and dispose of it in a sharps container. Also dispose of the lancet in a sharps container.
   10. Record the blood glucose results in the EMR.

E. Reference Ranges
   1. Blood glucose levels for people without diabetes are as follows:
      Adult Fasting 70-100 mg/dL
      Expected values for neonates (1 to 7 days old): 47 - 110 mg/dL
   2. The operating range or Linearity of the StatStrip Glucose Meter is 10 - 600 mg/dL. For samples exhibiting values at or above 600 mg/dL, the screen displays Hi.

F. Additional Precautions for Neonatal Testing
   1. All abnormal neonatal values should be confirmed by a clinical laboratory test method. All neonates exhibiting hypoglycemic symptoms, regardless of blood glucose monitoring results, should have their glucose tested by a clinical laboratory test method.
   2. Use caution when interpreting neonatal blood glucose results which are less than 50 mg/dL.

G. StatStrip Xpress Glucose Hospital Meter specifications:
   1. Data storage: the Xpress meter stores 250 total Patient and QC test results
   2. Battery used is a 3V Li Button Battery, is replaceable and has the life of a minimum of 600 tests
      **SEE PACKAGE INSERTS FOR CURRENT INFORMATION

H. Limitations
   1. If needed, sodium, lithium, and ammonium heparin are the recommended anticoagulants for use with the StatStrip® Xpress 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.

c. EDTA, citrate, oxalate, and sodium fluoride are NOT recommended for use.

d. Glucose Interferences:

1) The StatStrip Xpress 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)	20% - 65%
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(+) Maltotetriose	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

I. For technical assistance inside the United States, call Nova Biomedical Technical Services at: U.S.A.: 1-800-545-NOVA 1-781-894-0800 or FAX: 1-781-894-0585

VI. REFERENCES

Burtis, Carl A. and Ashwood, Edward R., ed. 1999. *Tietz Textbook of Clinical Chemistry.* Philadelphia, PA: W. B. Saunders Co.

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