NOTE: This is an equipment specific custom CHI procedure. If your facility does not use the equipment outlined here, please refer to alternate procedure source.

Extended Text

⚠️ Nursing Alert

A quality control test is required every 24 hours or according to institutional policy. The meter may ‘lockout’ to prevent patient testing when quality control tests are due.

Refer to institutional policy for critical values that should trigger provider notification for adults and neonates.

The performance of blood glucose testing systems (i.e., glucose meters, including the Accu-Chek® Inform II System), have not been evaluated in the critically ill population. Therefore, use of glucose meters in the critically ill is an off-label use and not authorized in this population. Other choices for blood glucose monitoring are:

1. Point of care testing: i-STAT® or RAPIDPoint® 500 Systems
2. Arterial or venous blood sample sent to the clinical laboratory

Definition of Critically ill: There is no universal definition of a critically ill patient. For the purpose of blood glucose monitoring only, a critically ill patient is one with three or more active vasopressor infusions (regardless of mean arterial pressure). Rationale: Even when arterial or venous blood sampling is used, blood glucose waived testing values (glucose meter results) may be significantly less accurate than clinical laboratory testing results in patients receiving more than two vasopressors.

PATIENT ALERT

Diabetic patients frequently have peripheral vascular disease, making it difficult to produce a large drop of blood after a finger stick. Be sure to hold finger in dependent position before puncturing to improve blood flow.

OVERVIEW

The ACCU-CHEK® Inform II System is a point of care blood glucose monitoring system. The system can record a variety of information related to glucose monitoring such as date, time, test results, and patient identification.

SUPPLIES AND EQUIPMENT

- ACCU-CHEK® Inform II meter
- Base Unit
- ACCU-CHEK® Inform II test strips
- ACCU-CHEK® Inform II control solutions
- Lancet
- Gloves
CULTURAL CONSIDERATIONS

- Assess cultural beliefs associated with specimen collection.
  - For example, Southeast Asians may consider blood as irreplaceable. Chinese may associate blood with life force. They may become anxious about a needle penetrating the skin, allowing blood to seep out.5
- Consider both cultural and language barriers when delegating specimen collection to the patient and family members.
  - For example, Muslims and Hindus may designate which hand is to be used for clean and dirty tasks. Provide for hygienic needs of patients after procedure. Include hand hygiene.
  - Language barriers make it difficult to explain the purpose of tests and collection techniques. Use a medical interpreter to provide such explanations.
- Whenever possible, use gender-congruent caregivers when collecting specimens from patients whose cultural values uphold distinct separation of gender roles and modesty.

PATIENT EDUCATION

- For patients who monitor their blood glucose at home provide resources and teaching aids when needed.
- Emphasize the importance of the timing of blood glucose monitoring.
- Explain blood glucose testing and results.
- Discuss the importance of washing hands before obtaining blood sample.

PATIENT ASSESSMENT AND PREPARATION

Assessment

1. Assess patient’s understanding of the procedure and purpose of blood glucose monitoring.
2. Assess skin at the potential puncture sites.
   a. Inspect fingers and heels.
   b. Avoid areas of bruising and open lesions.
3. Assess for signs and symptoms of hypoglycemia and hyperglycemia.
4. Assess the patient’s peripheral circulation to determine the appropriateness of lancet use versus venipuncture.

Preparation

1. Review practitioner’s order for time and frequency of glucose measurement.
2. Determine if specific conditions need to be met before or after sample collection (e.g. fasting, after meals, after certain medications, before insulin doses).
3. Determine if risks exist for performing skin puncture (e.g. low platelet count, anticoagulant therapy, bleeding disorders).
4. Determine if the meter is operating properly.
   a. The correct date and time are displayed.
   b. There is no error message on the screen.
   c. The battery has power.
d. The quality control is not due.
5. Gather supplies.
   a. Determine if the supplies are all within expiration date.

**PROCEDURE**

Click here to view

**I. Patient Test**

1. 1. Determine whether or not the patient meets the definition of critically ill.
2. 2. Choose the appropriate blood glucose testing method.
3. a. If not critically ill, use the Accu-chek Inform II
4. b. If critically ill, do not use a glucose meter. Instead choose any one of the following:
   a. i-STAT® System
   b. RAPIDPoint® System
   c. Send blood sample to laboratory.
5. Follow standard precautions; perform hand hygiene and don gloves.
7. Instruct patient to perform hand hygiene with soap and warm water, if able.

   **Rationale:** Promotes skin cleansing and vasodilatation at selected puncture sites. Hand washing establishes practice for patient when self-testing. Warm water dilates blood vessels. Hand washing removes residual food that can falsely elevate glucose results.

8. If the patient is unable to wash his/her hands, then clean site with antiseptic wipe, and allow it to dry completely.

   **Rationale:** Alcohol or other skin preparation ingredients may interfere with the glucose test chemistry and cause an inaccurate reading. Alcohol can dry out the skin. Warm water dilates blood vessels. Hand washing removes residual food that can falsely elevate glucose results.

9. Position patient comfortably in chair or in semi-Fowler position in bed if possible.

   **Rationale:** Ensures easy accessibility to puncture site. Positioning establishes practice for patient when self-testing.

10. Press the On/Off button to turn on the ACCU-CHEK Inform II meter.
11. Assess the ‘Power Up’ screen [See Figure 1](#)
12. Press **Forward Arrow Button** to continue to the Operator ID screen.
13. Enter your operator ID by scanning or manual method. Scanning method should be used when available. **Operator ID may not be required by all institutions.** [See Figure 2](#)
   a. Scan
i. Press the **barcode** button. See Figure 3
ii. Scan your operator ID barcode. When scanning, hold the meter so that the window of the barcode scanner is approximately 4-8 inches above the barcode you wish to read.
iii. When scanning is successful, the meter will beep.
iv. Your identification code will be displayed on the screen.
v. The Main Menu screen will appear. See Figure 4

b. Manual (*Manual entry may not be available at all institutions. Safeguards such as not informing staff of their Operator ID may be in place to ensure scanning method is used.*)
   i. Type the numbers of your operator ID on the touch screen, touch ✰.
   ii. The Main Menu screen will appear.

14. Press **Patient Test**.

15. Enter the patient’s identification by scanning or manual method. Scanning method should be used when available. See Figure 5
   a. Scan
      i. Press the **barcode** button. See Figure 3
      ii. Scan the barcode on the patient’s armband. When scanning, hold the meter approximately six inches away from the barcode and pass the red laser over the barcode. *For institutions or departments not using armbands, follow institutional or departmental policy.*
      iii. When scanning is successful, the meter will beep.
      iv. The patient’s identification code will be displayed on the screen.
      v. The Strip Code Confirmation screen will appear.
   b. Manual
      i. Type the patient’s ID number on the touch screen, touch ✰.
      ii. The Strip Code Confirmation screen will appear.

16. Check the expiration date on the test strip vial and discard if expired.
   a. If the test strips are expired or need to be discarded for any reason, then you must obtain a new test strip vial and verify correct code.

17. Verify the Strip Code by scanning or manual method. Scanning method should be used when available.
   a. Scan
      i. Press the **barcode** button. See Figure 3
      ii. Scan the barcode on the test strip vial.
      iii. To use the preselected lot number displayed by the meter, touch ✰ to confirm. See Figure 6
      iv. To use a different lot number than the one displayed, touch ✰ to display a list of stored lot numbers. Select the desired lot number from the list. Then, touch ✰ to confirm the selected test strip lot number. See figure 7

      *Note: Code key information will be uploaded to the meters from a centralized location/process as new lots of test strips are obtained by the facility. Individual nursing units will not upload new code key information.*

18. After the strip code is verified, the Insert Strip screen appears. The Insert Strip screen shows an image of the test strip flashing on the touchscreen. See Figure 8

19. Remove the test strip from the vial and replace the lid immediately.

20. Gently insert the strip into the meter with the electrodes facing up and toward the test strip port. 
    *Note: Insert test strip BEFORE dosing.*
21. When the strip is inserted properly, the Apply Sample screen appears. See figure 9 Wait until the flashing drop appears in the screen before applying the blood.

22. Choose puncture site.
   a. Puncture site should be vascular.

   Rationale: Ensures free flow of blood following puncture.

   b. In adult, select lateral side of finger; be sure to avoid central tip of finger, which has more dense nerve supply.
   c. In infant, select lateral side of heel; be sure to avoid the arch of the foot.
   d. The meter will work with capillary, venous, arterial, and neonate heelstick.

23. Hold finger in dependent position while gently massaging finger toward puncture site.

   Rationale: Increases blood flow to the area before puncture.

24. Position lancet perpendicular to the puncture site. Hold the lancet firmly against the skin and push the release button to pierce the skin. Follow manufacturer guidelines for lancet operation. See Figure 10

25. Lightly squeeze toward puncture site (without touching puncture site) until large drop of blood has formed. Re-puncturing is necessary if large enough drop does not form. Wipe away first drop of blood when collecting capillary sample from patient and then test on the following drop or according to institutional policy.

   Rationale: Adequate size drop is needed to obtain accurate results. Excessive squeezing of tissues during blood sample collection may contribute to pain, bruising, scarring, and hematoma formation. Touching puncture site will smear the blood.

26. Add the blood sample to the front of the test strip. See Figure 9
   a. Touch and hold the drop of blood to the front edge of the yellow target area on the test strip.
      i. The blood will wick into the test strip.
      ii. Do not smear the blood.
      iii. Do not apply the blood to the top of the test strip.
   b. The meter beeps when it detects an adequate sample.

27. An hourglass appears while the test is running. See Figure 11

28. When the test is done, the meter will beep and display the test result. See Figure 12
   a. A critically low result is less than 50mg/dl or according to institutional policy.
   b. A critically high result is more than 450 mg/dl or according to institutional policy.

29. Enter Comments
   a. A comment should be entered when test results are critical or according to institutional policy.
   b. Press the Comments button to enter a comment about the test
      i. Press a pre-programmed comment button to enter a pre-programmed comment (e.g. doctor notified, will repeat test). See Figure 13
      ii. Press custom to enter a custom comment (e.g. fasting).
30. Press **Forward Arrow** to return to the Main Menu.
31. Remove and discard the test strip.
32. Turn off the meter.
33. Discard supplies, remove gloves, and perform hand hygiene.
34. Clean the meter (or refer to institutional policy on the cleaning of equipment).
   a. Use a damp cloth or pre-moistened wipe to clean the meter. The cloth or wipe should be damp not wet. Squeeze excess cleaning solution out of the cloth or wipe before cleaning the meter. Appropriate cleaning solutions include:
      i. Sani-Cloth (Active ingredient: ammonium chloride)
      ii. Bleach Solution (1:10 dilution of bleach)
   b. Gently wipe the exposed surfaces of the meter. Avoid the electronic connectors at the bottom of the meter.
   c. Do NOT allow cleaning solution to enter the test strip port.
   d. The meter must be completely dry before putting it back in the base unit.
   e. Do NOT use cleaners containing the chemicals ether, polyhexandine, phenol, or prepared solutions or wipes containing a mixture of bleach and detergent.
35. Return the meter to the base unit after the meter is completely dry.
36. Perform hand hygiene.
37. Document the test result.

**II. Quality Control Test**

*Note: A control test should be performed per institutional policy when you open a new vial of strips, if the cap is left of the vial of test strips, whenever there is a question about repeated patient glucose levels, when the result is not consistent with the patient’s clinical presentation, after the meter is dropped, and according to institutional policy. In some facilities, control tests are performed by laboratory personnel rather than by nursing personnel; refer to institutional policy.*

1. Press On/Off to turn on the ACCU-CHEK Inform II meter.
3. Press **Forward Arrow** to continue to the Operator ID screen.
4. Enter your operator ID by scanning or manual method. Scanning method should be used when available. *(Operator ID may not be required by all institutions).*
   a. Scan
      i. Press the **barcode** button. See Figure 3
      ii. Scan your operator ID barcode. When scanning, hold the meter so that the window of the barcode scanner is approximately 4-8 inches above the barcode you wish to read.
      iii. When scanning is successful, the meter will beep.
      iv. Your identification code will be displayed on the screen.
v. The Main Menu screen will appear.
   b. Manual
      i. Type the numbers of your operator ID on the touch screen, touch \( \mathcal{C} \).
      ii. The Main Menu screen appears on the screen.
5. Press **Control Test** to continue to the Control Test screen. **See Figure 14**
6. On the Control Test screen, press either the **Level 1 (Lo)** or the **Level 2 (Hi)** button. You will need to run both levels to complete the quality control test.
7. Obtain the control solutions.
8. Check the expiration date on the control solution and discard if expired.
   a. Once opened, the control solution can be used for 3 months unless the printed expiration date occurs sooner than 3 months. Discard based on earlier date.
   b. When you open a new bottle, write the date opened and the date it should be discarded in the space at the bottom of the bottle. **See Figure 15**
9. Verify the **Control Solution** lot number by scanning or manual method. Scanning method should be used when available.
   i. Press the **barcode** button. **See Figure 3**
   ii. Scan the barcode on the bottle of control solution.
   iii. To use the preselected number displayed by the meter, touch \( \mathcal{C} \) to confirm **See Figure 16**
   iv. To use a different number than the lot number displayed, touch \( \mathcal{X} \) to open the keypad and enter the number manually and touch \( \mathcal{C} \) to confirm the selected control lot number.
   v. Verify the **Strip Code** by scanning or manual method as described in the Patient Test Section above.
10. After the strip code is verified, the Insert Strip screen appears. **See Figure 17**
11. Remove the test strip from the vial and replace the lid immediately.
12. Gently insert the strip into the meter with the electrodes facing up and toward the test strip port. **See Figure 16**
13. When the strip is inserted properly, the Apply Control Solution screen appears. Wait until the flashing drop appears in the screen before applying control solution. **See Figure 17**
14. Apply the control solution to the front of the test strip. **See Figure 17**
   a. Touch and hold a drop of control solution to the front of the test strip. The solution will wick into the test strip.
   b. The meter will beep when it detects a sample.
15. An hourglass appears while the test is running.
16. When the test is done, the meter will beep and display the control test result.
   a. The display window will show **PASS** or **FAIL**. **Institutions may configure the control to display a numeric value. If a numeric value is displayed, press Range to see the control limits. Compare the control test result to the control limits. If the value is within the limits, then the meter and strips have passed the control test.**
   b. Enter comments if desired or according to institutional policy.
17. Repeat procedure with the other control test solution.
18. Press \( \mathcal{C} \) to return to the main menu.
19. Remove and discard the test strip.
20. Turn off the meter.
21. Return the meter to the base unit.
Review Results – Recalling Test Information

1. Turn the meter on by pressing the On/Off button
2. Barcode scan or manually enter your operator ID according to institutional policy and touch √ to confirm and display the Main Menu
3. From the Main Menu, touch Review Results
4. The Review Results screen displays the most recent stored result(s), the time and date of the result, and the patient ID, QC level or sample ID.

5. Review Results by Date
   a. Touch <down arrow> to display results from previous dates. Touch <up arrow> to display results from tests before the one you are currently reviewing.
   b. Touch any result to view result details. The following information will be displayed: Patient ID, QC level or sample ID, the lot number of the reagent(s) used to perform the test, the test result, the date and time the test was performed, and comments that were entered at the time the test was performed.
   c. Touch <left arrow> to return to the previous screen

6. Review Results by Patient
   a. Touch Patient to specify a patient whose result you want to see.
   b. Barcode scan or manually enter the patient ID for the patient whose results you want to display. Use arrow button icons to scroll through the patient results.
   c. Touch any result to view result details.
   d. Touch <left arrow> to return to the previous screen.
7. Review Results by QC
   a. Touch QC to review all QC results. Use the arrow button icons to scroll through the QC results.
   b. Touch any QC result to view result details.
   c. Touch <left arrow> to return to the previous screen.
8. Touch the menu icon to return to the Main Menu

Calibrating (Coding) the Accu-Chek Inform II Meter

Each box of test strips contains a code key. Each code key belongs to a single lot number and provides important information about the lot specific parameters of the test strip.

The properties of the test strips are uploaded (as a code file) from the code key using the code key reader and sent to the meter. The code file is stored in the meter / data management system and only needs to be uploaded once per lot of test strips. As new lots of test strips are obtained by the institution, the code key information will be uploaded to the meters from a centralized location such as
the laboratory. Individual units will not upload new code key information. Code key information will be transmitted to the meters according to the method that was configured by the institution. Configuration for code key transmission may be either through the base units or wirelessly.

At the point of care, coding is verified by matching the test strip lot number on the Accu-Chek Inform II meter touchscreen with the code number printed on the vial of test strips.

EXPECTED OUTCOMES

- Accurate blood glucose levels are obtained at the point of care.
- Blood glucose levels are within a normal range.
- The ACCU-CHEK Inform II system is maintained in working order.
- The meter passes the quality control tests before patient testing is performed.
- Puncture site shows no evidence of tissue damage or persistent bleeding.

UNEXPECTED OUTCOMES

- Puncture site is bruised or continues to bleed.
- Blood glucose level is above or below the target range. Appropriate response includes:
  - Follow provider orders or institution guidelines for blood glucose management
- Meter is damaged.
- Meter malfunctions. Appropriate response includes:
  - Remove the meter from use.
  - Perform quality control tests.
  - Retain the test strips and quality control solutions used with the meter to facilitate further investigation of the malfunction.
- The meter does not pass the quality control tests. Appropriate response includes:
  - Repeat quality control tests.
- Glucose is falsely elevated due to unclean puncture site (e.g. juice residue on finger).
- Result is not consistent with patient presentation. Appropriate response includes:
  - Perform quality control tests.

DOCUMENTATION

- Procedure
- Glucose level
- Action taken for abnormal blood glucose level
- Response to the procedure including appearance of puncture site
- Patient education

AGE-SPECIFIC CONSIDERATIONS
Blood Glucose Monitoring System – ACCU-CHEK® Inform II

Pediatrics

- The meter is approved for use with neonate heel stick; however, it is not for use with neonate cord blood samples.

REFERENCES


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The following are illustrations which will be uploaded into the “Illustrations” section of eCRS/SKILLS and hyperlinked from the Extended Text. Permission to use these illustrations has been secured and signed by Roche Diagnostics Corporation on January 6, 2012. Email confirmation for continued use of updated pictures secured on May 13, 2013.

Images:

AccuChek Inform II System: Meter Components, Front View

AccuChek Inform II System: Meter Components, Back View

AccuChek Inform II System: Code Key Reader
Figure 1: The AccuChek Inform II system is powered up by using the power button on the AccuChek Inform II meter.

Figure 2: Operator ID Screen

Figure 3 Barcode Button

Figure 4: Press Patient Test

Figure 5: Scanning the patient ID

Figure 6: Strip Confirmation Screen
Blood Glucose Monitoring System – ACCU-CHEK® Inform II


Figure 7: Strip not confirmed screen

Figure 8: Insert Strip Screen

Figure 9: Apply blood sample

Figure 10: Positioning the Lancet

Figure 11: An hourglass is displayed while the meter completes the test
Figure 12: Example result in normal range

Figure 13: Add comments

Figure 14: From the main menu, press Control Test

Figure 15: Date the control solutions when opening a new bottle
Figure 16: Verify control lot

Figure 17: Apply control solution