

DISCHARGE OF AN INFANT WITH
PERSISTENT HYPOGLYCEMIA

Assessment of discharge readiness

- Goal blood sugars are > 60 mg/dL after 48 HOL for AC blood sugars and fasting.
- Goal of > 70 mg/dL may be used in high risk infants with additional risk factors (sibling with congenital hyperinsulinism, known glycogen storage disease or other known hypoglycemic disorder).

Prescriptions

- Prescriptions (esp. glucometer) should be obtained as soon as it becomes apparent patient will need home monitoring. This will allow time for prior authorization, insurance approval and discharge education. Care coordinator should be involved in this process.
- Glucometer
- Test strips
- 28 Gauge lancets
- If recommended:
 - Glucagon
 - Glucose Gel (not a prescription can purchase in pharmacy aisle at Walgreen's in Longwood)
 - Diazoxide
 - Diurel (if using in patient)

Discharge teaching should begin as soon as patient is identified to need home blood sugar monitoring. Liz Brennick, staff RN and Julie Cadogan, RN Professional Development Manager, are available as resources.

Discharge checklist

- Endocrine DC instructions
- Outpatient endocrine appointment
- Has all prescriptions
- Medication teaching (including understanding of when to use glucagon and dextrose gel)
- Demonstrates ability to use glucometer x 2 (preferably with two care takers)
- Verbalizes understanding of when to call endocrine

Glucometers

- First choice: Bayer Contour Next
- Second choice Freestyle Lite

Bayer Contour Next



- Superior accuracy measuring blood sugars <70
- Requires prior authorization (LIP/MD responsibility)
- Can be more difficult to achieve insurance approval
- Care coordination should be involved
- Is not stocked by BWH/CHB outpatient pharmacy. Is stocked at CVS Longwood or can be sent to home pharmacy

Bayer Contour Next



Your CONTOUR[®]NEXT Meter



Sample Tip
Blood sample pulled in here

Your CONTOUR[®]NEXT Test Strip

CAUTION: Use only CONTOUR NEXT test strips with your CONTOUR NEXT meter.

For a full list of important warnings and limitations of your system, please see the first 5 pages of your CONTOUR[®]NEXT meter user guide, especially INDICATIONS FOR USE, IMPORTANT SAFETY INFORMATION, WARNINGS and PRECAUTIONS.

Turning the Meter On or Off

- Press and hold the **OK** button until your meter turns **On** or **Off**.
- Inserting a test strip into the meter test strip port will turn the meter on.

Up/Down Scroll/OK Buttons

- The **▲** or **▼** scroll buttons allow you to change values or options one at a time. You can hold the **▲** or **▼** button to scroll.
- Press the **OK** button to select the highlighted option.
- To exit from the Logbook or Trends and return to the Main Menu, press the **OK** button.
- To exit from Setup and return to the Main Menu, scroll down to **Main Menu** and press the **OK** button.

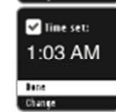
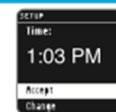
Initial Setup of Your Meter

You must set up your meter before doing your first blood sugar test.



A screen confirms your choice. Press the **OK** button to continue.

1. Press and hold the **OK** button until the meter turns on.
2. Press the **▼** button if needed to highlight your desired language. Scroll down to see more languages. Press the **OK** button to select.



3. The time will appear and you can **Accept** or **Change**. To change the time, use the **▼** button to select **Change** and press the **OK** button. Use the **▲** or **▼** buttons to change and press the **OK** button to move to the next item. A screen confirms your choice. Press the **OK** button to move to date setup.

4. The date will appear and you can **Accept** or **Change**. To change the date, use the **▼** button to select **Change** and press the **OK** button. Use the **▲** or **▼** buttons and press the **OK** button to move to the next item.



A screen confirms your date choice when done. Press the **OK** button to move to Targets.

5. Press the **OK** button to continue.

6. After you have completed initial setup, you can change the Target ranges using the Setup menu. Press the **OK** button to continue.



7. Press the **OK** button to continue to the Before Meal Target range.

8. Press the **OK** button to continue to the After Meal Target range.

9. Press the **OK** button to complete your initial setup. You can now test your blood sugar.

- Must do initial set up prior to first blood sugar. This includes date,

Lancet device

*Heel Stick for Infants

Blood Sugar Testing – Fingertip

WARNING

Always wash your hands well with soap and water and dry them well before and after testing, handling the meter, lancing device or test strips.

CAUTION: The lancing device provided with your kit is intended for self testing by a single patient. It must not be used on more than one person due to the risk of infection.

1. Remove the endcap from the lancing device.



2. Loosen the round protective cap on a lancet by rotating it ¼ turn, but do not remove the cap.



3. Insert the lancet firmly into the lancing device until it comes to a full stop.



4. Twist off the round protective lancet cap.



5. Replace the endcap.



6. Adjust the endcap dial to your preferred puncture depth setting.



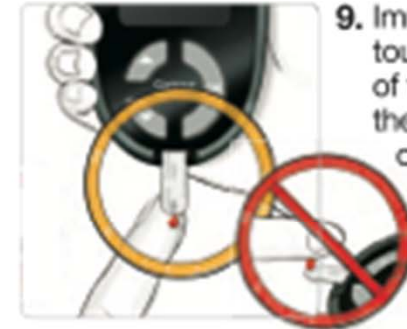
7. Insert the square gray end of the test strip into test strip port.

The meter will turn on and you will see the **Apply Blood** screen. The meter is now ready to test.



8. Press the lancing device firmly against the puncture site and press the release button.

Stroke your hand and finger towards the puncture site to form a drop of blood.



9. Immediately touch the tip of the test strip to the drop of blood.

If the first blood drop is not enough, the meter will beep twice. You have about 30 seconds to apply more blood to the same strip. Follow instructions on the meter screen.

Inserting test strip

- Remove Contour next test strip from bottle. Tightly close bottle lid immediately after you have removed strip.
- Hold test strip with gray square end facing toward meter.
- Insert gray square end firmly into test strip port until the meter beeps. This will also turn meter on.
- See an “Apply blood” screen, your meter is now ready to test.
- After the test strip is inserted you have three mins to apply blood or the meter will turn off. If it does, remove the test strip and reinsert to begin.
- If you do not apply enough blood you will get a display “Apply more blood to continue testing” you have 30 seconds to apply more blood onto same strip.

Autolog

- After applying blood there will be a result in 5 seconds. The screen will prompt you to choose when the test occurred. Most likely it will be “before meal”.
- Does not matter which you choose. It is a tool used for providers when they review blood sugars in office.

Lancet Device

- Remove endcap from lancing device
- Loosen round protective cap by rotating 1/4 but do not remove cap fully
- Insert lancet firmly, twist off round protective cap. Replace the end cap.
- Adjust the endocarp dial to preferred puncture depth
- Start with middle number, can be trial and error. Higher number equates to a deeper puncture.

Ejecting and disposing of lancet

- Do not use your fingers to remove the lancet from lancing device.
- There is an automatic lancet ejection feature.
- Lancets are one time use.
- Dispose of used lancet as medical waste.

Caring for your meter

- Store meter in carrying case
- Wash and dry hands before handling to keep meter and test strips free of water and other contaminants
- Avoid exposing meter and test strips to excessive humidity, heat, cold, dust or dirt
- Clean and disinfect once a week using clorox germicidal wipes 0.55% bleach



Freestyle Lite

- LIP/MD places order through EPIC
- BWH outpatient pharmacy tech will bring meter and set up meter with family.
- RN responsible for teaching parents to perform heel stick

Freestyle quick start

System Check Screen

- This display always appears when the meter is turned on. You should check that your meter matches the example exactly every time your meter turns on.

Display Screen

Displays your test results and other important information.

m (Mode) Button

- Moves to different mode settings
- Scrolls backward
- Silences a reminder alarm

Light Button

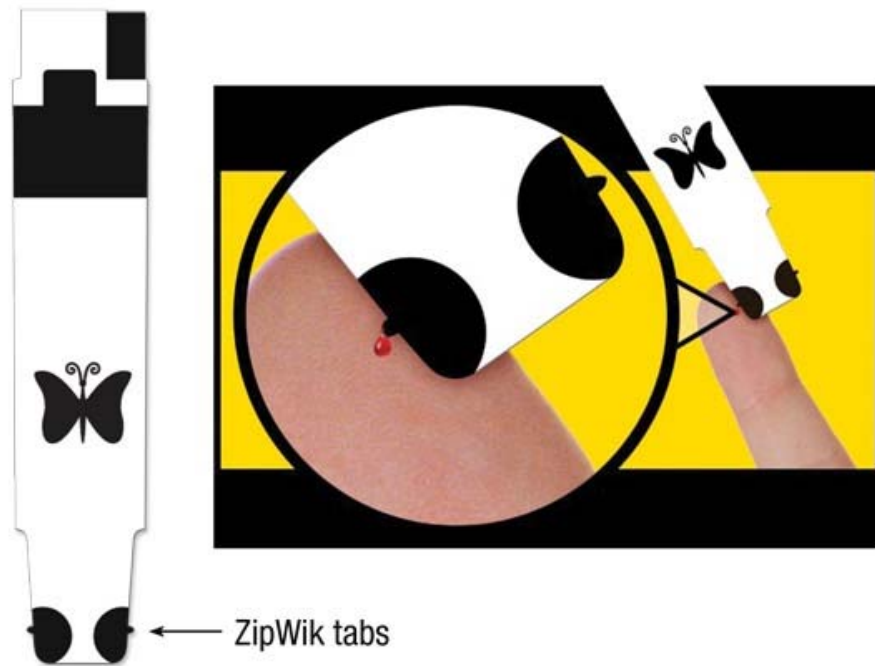
Controls the display backlight and test strip port light.

c (Configure) Button

- Marks a control solution test
- Scrolls forward
- Displays clock
- Silences a reminder alarm

Test Strip Port

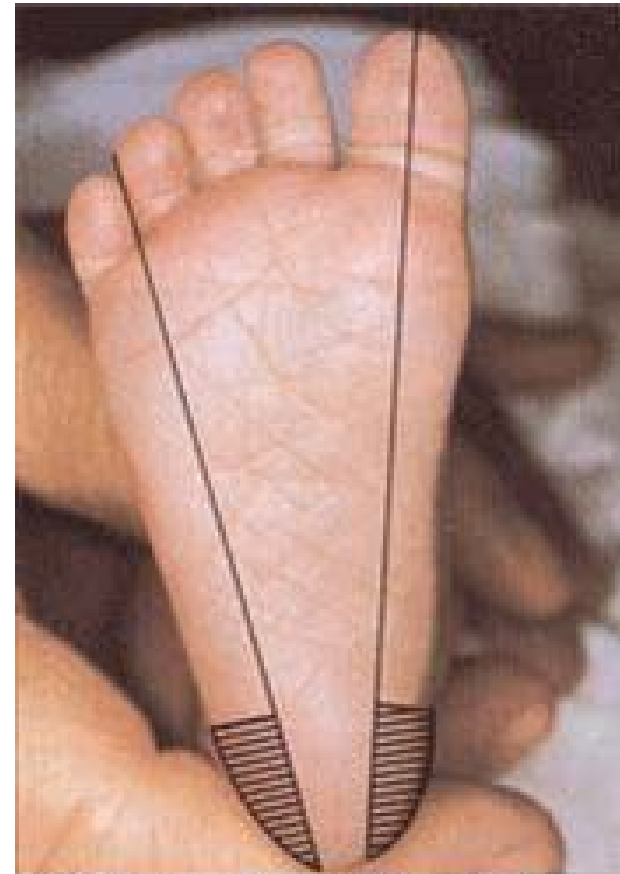
Insert the Top end of a new FreeStyle Lite® test strip here. The meter powers on when you insert the test strip.



- Freestyle lite test strips differ from other test strips in that the blood is applied from the side of the test strip vs the front.
- Sample Areas are the dark-colored half-circles on test strip.
- Apply blood to one sample area only.

How To Perform a Heelstick

- Ensure the heel is warm
- Clean thoroughly with soap and water
- Puncture heel with lancet on either side of baby's heel. (See Picture)
- To prevent bruising do not squeeze
- Gravity helps increase blood flow to heel.
- Avoid previous puncture sites if possible.



Hatched area () indicates safe areas for puncture site.

- After teaching RN should witness parents obtaining a minimum of two samples under supervision prior to DC
- When parents perform in hospital, bedside RN will simultaneously use hospital glucometer and this value will be entered into EMR.
- Parents and providers should be aware that there is significant variation in the blood sugar readings obtained from different glucometers so the two values are not expected to be identical.
- The 2014 U.S. Food and Drug Administration (FDA) guidance for over-the-counter glucometers requires $\geq 95\%$ of results to fall within $\pm 15\%$ of the true value and $\geq 99\%$ of results within $\pm 20\%$ across the whole glycemic range.
- If a patient's true blood glucose concentration is 60 mg/dL, acceptably accurate results range from 51 to 69 mg/dL



Dextrose 40% Gel (Glucose Gel)

- If blood sugar is 45-60 mg/dl and well appearing may feed with breastmilk/formula and recheck BG in 15-30 mins.
- RN should calculate amount of gel to draw up in syringe
- If unwilling to eat give 5 grams glucose gel and recheck 15 mins
 - Squirt gel into medicine cup
 - Draw up prescribed dose in syringe
 - Massage gel into cheeks
- If not improving or if unresponsive/having seizure administer glucagon, turn pt on side and call 911

Blood sugar monitoring

- Check for endocrine note for patient specific discharge instructions
- Additional reasons to check:
 - Feeds spaced longer than 3 hours
 - Any symptoms of hypoglycemia (lethargy and jitteriness)
 - Check more frequently if infant is sick (fever, cold, vomiting, diarrhea)

*A Possible Endocrine Plan for Discharge:

Hypoglycemia Plan:

- Diazoxide dose:
- Please continue Diazoxide ____mg twice daily

Blood glucose monitoring

- Check blood glucose twice daily, best prior to feeds and just before next diazoxide dose
- Additional reasons to check:
- Feeds spaced longer than 3 hours apart
- Any symptoms of hypoglycemia (sweating, lethargy, jitteriness)
- Increased checks in settings of illness (fever, cold, GI illness)

Treatment of low blood glucose (BG):

- If BG ____mg/dL may feed with breastmilk or formula and recheck BG before next feeding
- If BG ____mg/dL and well appearing may feed with breastmilk or formula and recheck BG in 15-30 minutes
- If unwilling to eat give 5 grams glucose gel and recheck in 15 minutes
- If BG ____mg/dL or if infant is symptomatic then give 5 grams of glucose gel and recheck in 15 minutes. If not improving or if unresponsive or having seizure, turn the infant in his/her side and administer 0.1mg (0.03mg/kg) mg of glucagon, call 911

- Please call endocrinology if low BG < ____ or for any questions
- Please call endocrinology if BG persistently > ____ (more than 2 times per day)

Endocrinology Contact:

- Please schedule a follow-up endocrinology appointment 4-6 weeks after discharge
- Please tell the scheduler this is an "inpatient follow-up for hyperinsulinism". The family may see any Endocrine provider at any BCH location.
- For non-urgent questions during business hours (8AM-6PM) or to schedule appointment please call: 617-355-7476.
- If emergency after hours please call main BCH 617-355-6363 and ask for "endocrinology on call"

" Please Note this is a typical plan and should be used only for guidance. Please be sure to check your patient's specific plan with the Provider

Glucagon

What is glucagon?

- Used to treat severe low blood sugar (hypoglycemia).
- Works by telling your body to release sugar (glucose) into the bloodstream to bring the blood sugar level back up
- Glucagon is different from insulin.

When to Give

If baby shows:

- Unconsciousness, unresponsiveness
- Convulsions (seizures)
- If BG < 45 mg/dL after gel administration without improvement

Glucagon or GlucaGen Kit Storage



- Store at room temperature
- Expiration date: Monitor
- After mixing, dispose of any unused portion within one hour

Emergency Kit Contents:

1 mg of freeze-dried glucagon (Vial)

1 ml of water for reconstitution (Syringe)



Combine immediately before use

Download Glucagon APP



What Is Glucagon?

Treating Severe Low Blood Sugar

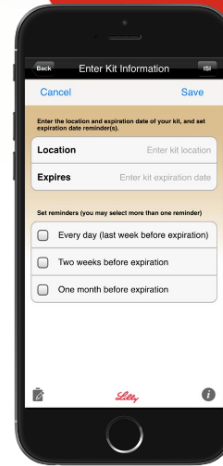
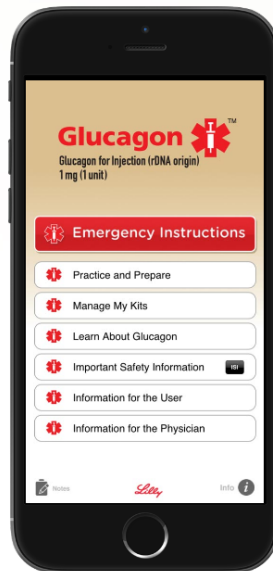
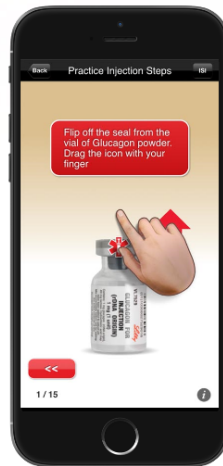
Tips and Tools

How to Use Glucagon

FAQ

The FREE Glucagon App lets you:

- Walk through each step of administering Glucagon using the touch-screen simulator
- Use Glucagon in an actual emergency with step-by-step guidance, including an audio option that can help you follow the instructions
- Keep track of the locations of your emergency kits in the kit log and set expiration date reminders



Indication and Important Safety Information for Glucagon

Glucagon is a treatment for insulin coma or insulin reaction resulting from severe low blood sugar.

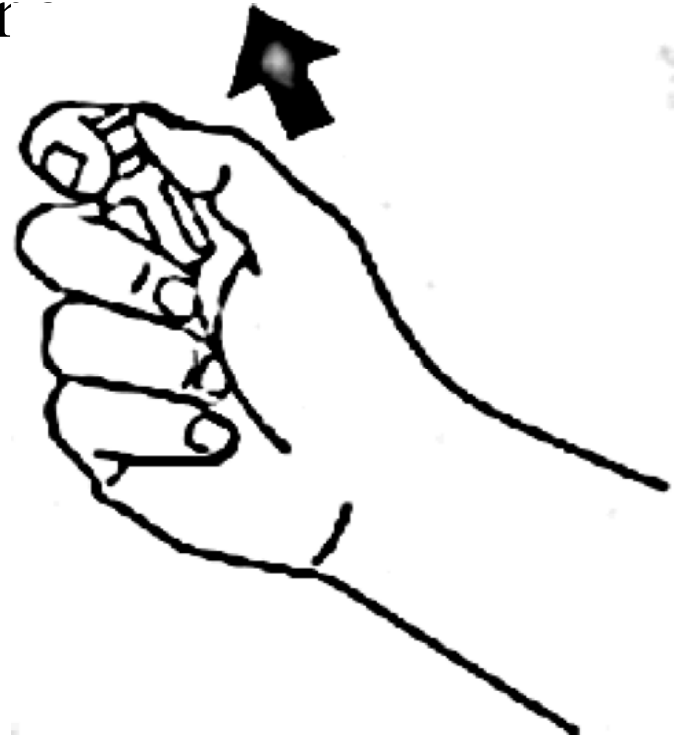
What is the most important information I should know about Glucagon?

- Glucagon should not be used if you have pheochromocytoma or if you are allergic to Glucagon.
- Make sure you tell your healthcare provider if you have been diagnosed with or have been suspected of having an insulinoma as Glucagon should be used cautiously in this situation.
- You and anyone who may need to help you during an emergency should become familiar with how

[VIEW ALL >](#)

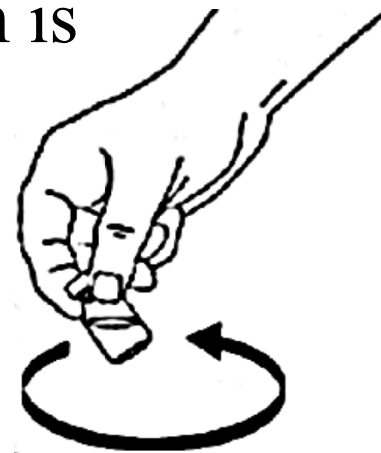
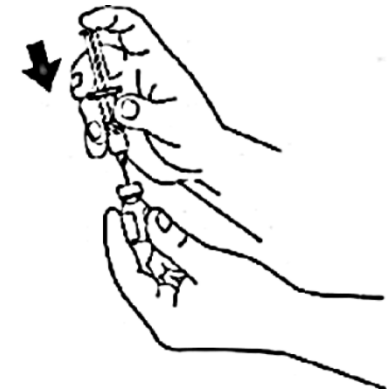
Preparation

1. Flip cap off glass vial containing dry powder
2. Remove cap from syringe
3. Put on gloves if available



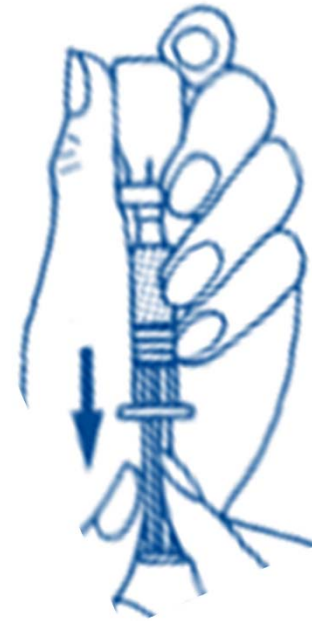
Mixing Solution

4. Inject entire fluid in syringe into the bottle containing powder
5. Shake gently or roll to mix until all powder is dissolved and solution is clear.



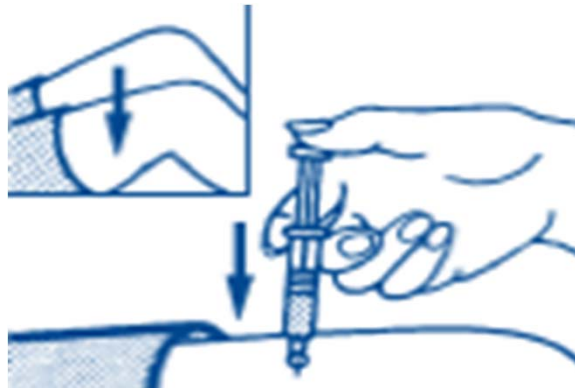
Dosing and Drawing Out

6. Inspect. Solution should be clear and colorless.
7. Draw prescribed amount of glucagon back into syringe.



Injecting

8. Clean site if possible.
9. Inject at 90° into the tissue under cleansed area into the muscle on either thigh



After Injecting

- Call 911
- Call Endocrinology as directed

Diazoxide

- Medicine used for the treatment of persistent or severe hypoglycemia
- Onset of action is within 1 hour with duration of action 8 hours (assuming normal renal function)
- Continue Prescribed dose as directed by Endocrinology
- Most common report side effects are hypertrichosis and fluid retention
- Parents should call 911 if they see their baby having difficulty breathing (cyanosis/increase in respiratory rate, labored breathing, retractions)

Endocrine Contact

- For non-urgent questions during business hours (8AM-6PM) or to schedule appointment please call: 617-355-7476.
- If emergency after hours please call main BCH 617-355-6363 and ask for endocrinologist on call
- Please call endocrinology in case of persistently low BG <70 or for any questions
 - While immediate treatment (beyond feeding) is not necessary for a blood sugar 60-70 babies who are discharged should be seeing sugars >70
- Please call endocrinology if BG is >100 more than 2 times per day
- Please schedule a follow-up endocrinology appointment 1-2 weeks after discharge
- Please tell the scheduler this is an “inpatient follow-up for hyperinsulinism”. The family may see any Endocrine provider at any BCH location.

References

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