



SCHOOL NURSE
Workshop

2024 Diabetes Updates

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July 18, 2024



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2024 Diabetes Update

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Objectives

- Upcoming Diabetes School Packet Changes
- Inpen
- Gvoke and Baqsimi



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COMING SOON



Changes coming for
treatment of
hypoglycemia!



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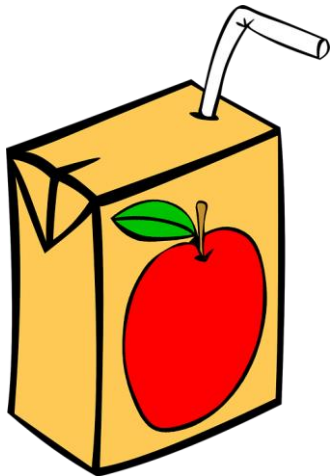
What changes are coming?

- Hypoglycemia algorithms
- Glucose for transportation by bus
- Insulin Pump Orders



Hypoglycemia Parameter Change

- American Diabetes Association (ADA) recommends treating Hypoglycemia for blood sugars less than 70 mg/dL using up to 15 grams of fast acting carbohydrates



Age Specific Desired Target Blood Glucose

90-180 = students less than 6 years

80-180 = students 6 years to less than 13 years

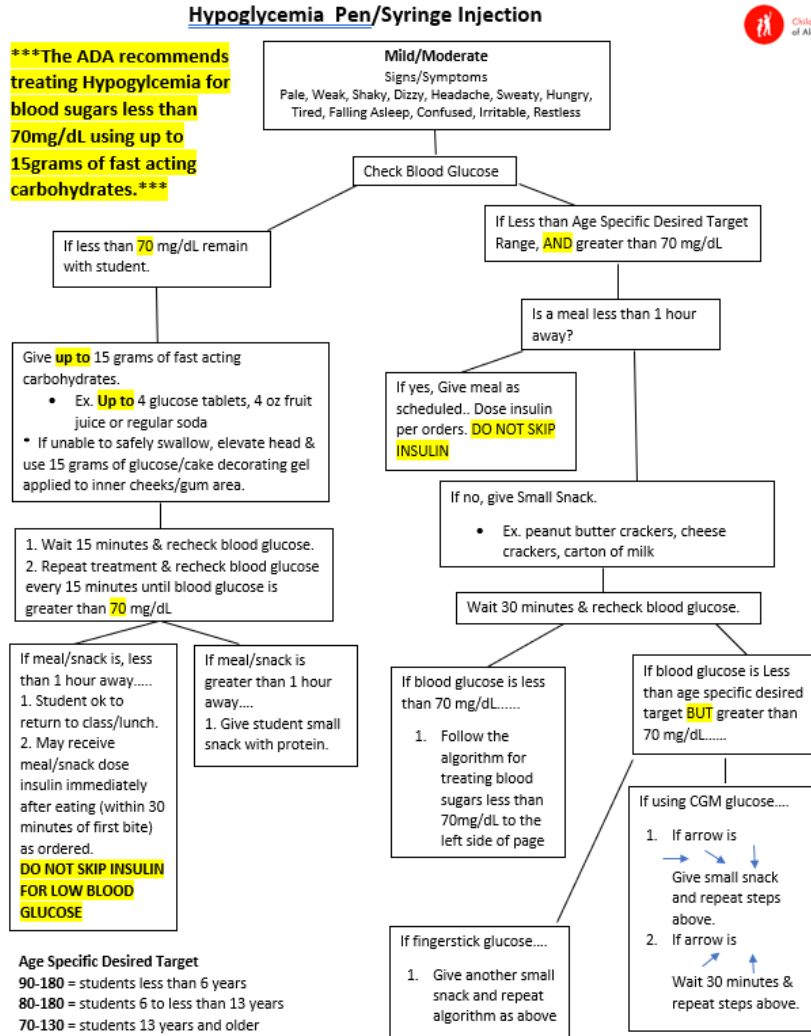
70-130 = students 13 years and older



Hypoglycemia Insulin Injections



ADA statement on every hypoglycemia page

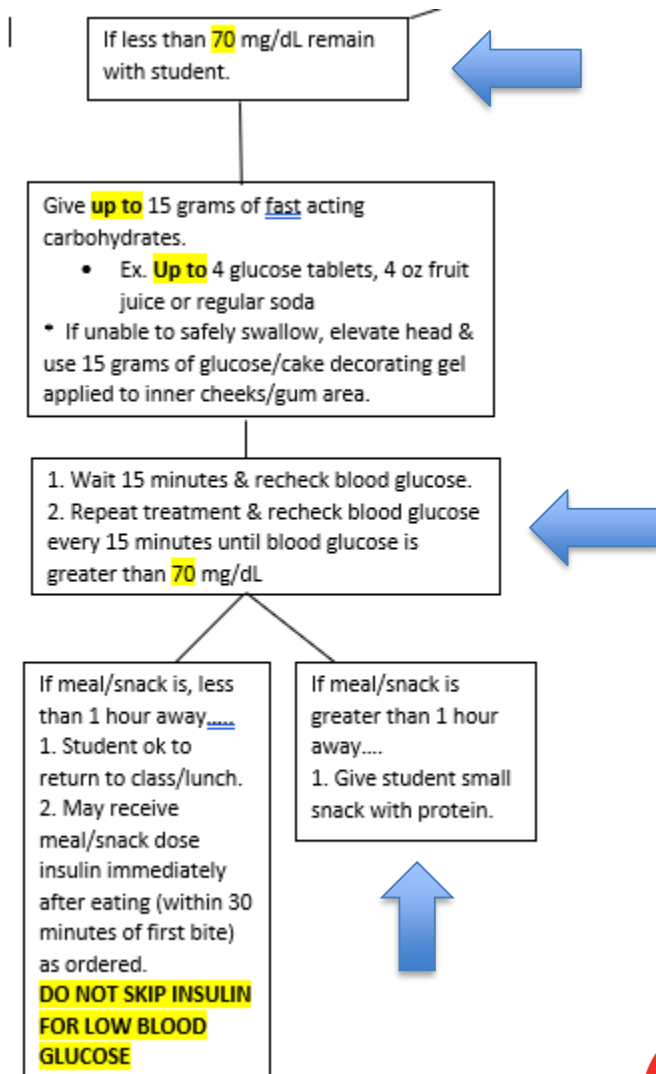


New algorithm for Mild/Moderate treatment for injections

Changes start based on "how low" the blood glucose reads



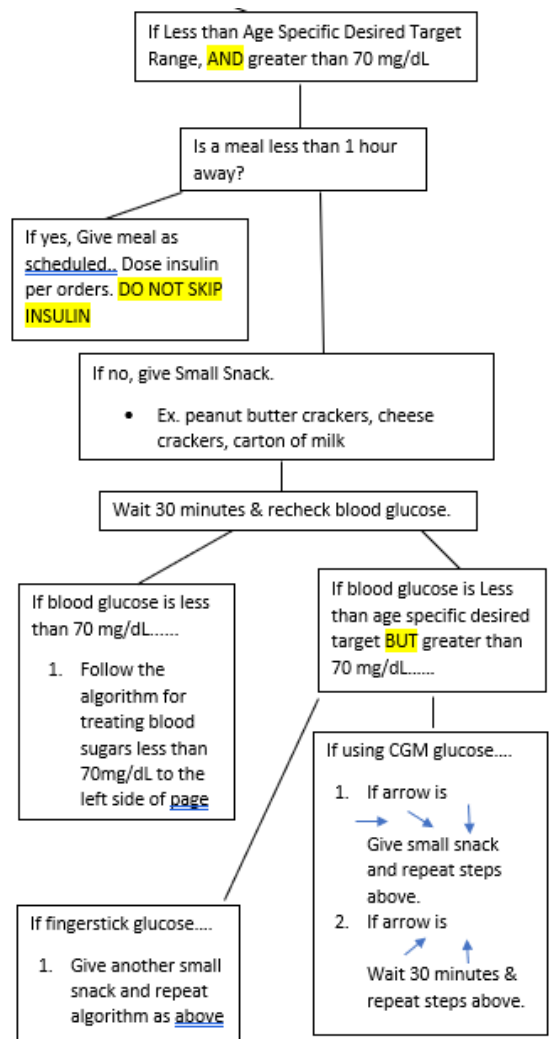
If Glucose is less than 70mg/dL



- Treat low blood sugars less than 70mg/dL as you have currently been treating.
 - Up to 15 grams of carbohydrates
- Goal to bring their blood sugar above 70 mg/dL, NOT the age desired target
- When meal/snack is greater than 1 hour away, give small snack with protein.
 - Not specifying grams as vendors/products are changing
 - Can specify in IHP with guardians on appropriate snacks



If BG is less than age desired target



Age Specific Desired Target

90-180 = students less than 6 years

80-180 = students 6 to less than 13 years

70-130 = students 13 years and older

- Small snack
 - Not specifying number of carbohydrates due to changes in vendors/product availability
 - Can clarify with guardians in IHP
- CGM vs fingerstick
 - Defines how to treat based on arrow on CGM

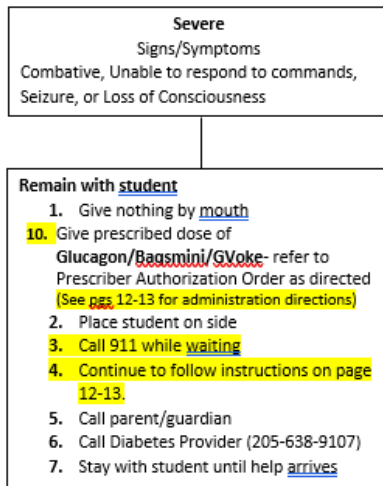


Severe Hypoglycemia Injections

Hypoglycemia Pen/Syringe Injection

The ADA recommends treating Hypoglycemia for blood sugars less than 70mg/dL using up to 15grams of fast acting carbohydrates.

- Added ADA statement
- Changed page numbers for reference
- No changes to steps of algorithm



Age Specific Desired Target

90-180 = students less than 6 years

80-180 = students 6 to less than 13 years

70-130 = students 13 years and older

HELP
EMERGENCY

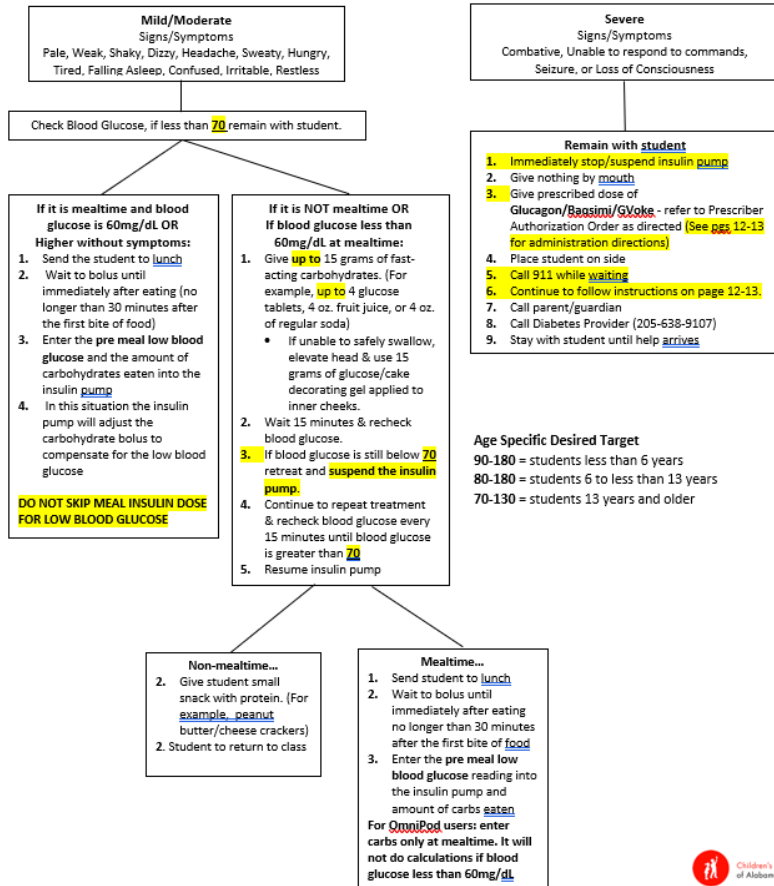


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Hypoglycemia Insulin Pump

The ADA recommends treating Hypoglycemia for blood sugars less than 70mg/dL using up to 15grams of fast acting carbohydrates.

Hypoglycemia Insulin Pump



- Added ADA statement at the top
- Treating lows less than 70 mg/dL versus age specific target
- Not specifying for snack the exact amount of carbohydrates
 - Due to changing vendors and supply availability
 - Can specify with guardian in IHP



Transportation by School Bus

Transportation by School Bus

It is important for the student with diabetes to take some food with him/her on the bus. If the student feels low, he/she must be allowed to treat the low with fast acting carbohydrates, followed by [long acting](#) carbohydrate with protein.

- If the student has an afternoon snack scheduled, and it is not time for the snack, [please allow the student to carry his/her snack on the bus.](#)
 - Student will need his/her snack, if scheduled, and fast acting carbohydrates for treating **lows** prior to boarding the bus. ([review](#) pages 8 & 9 for examples of fast and long acting carbohydrates)
 - Parents will provide this snack, as well as a copy of the student's daily schedule listing meal and snack times.

[Check blood sugars as ordered by the provider, if the student feels low, signs/symptoms of hypoglycemia noted, and/or asked by the caregivers.](#) Please ensure that the student's blood sugar is [70](#) or above or less than [350](#) with no ketones or vomiting present before boarding the bus with.

If student is:

- **70mg/dl or below**
 - Treat as described on pages 8 & 9 and notify parent(s)/caregiver(s)
 - If blood sugar is greater than 80, 15 minutes after treatment, place on [bus](#)
 - If blood sugar is less than 80, 15 minutes after treatment, continue to follow hypoglycemia pathway and arrange alternate transportation with parent(s)/caregiver(s)
- **71mg/dl – 350mg/dl**
 - Allow student to board the [bus](#)
- **Above 350mg/dl with [no ketones](#), [no vomiting](#), and feeling [well](#)**
 - Student may ride the [bus](#)
- **Above 350mg/dl, with urine ketones, [and feeling well](#)**
 - Treat as described on pages 6 & 7 and notify parent(s)/caregiver(s)
 - Student may ride the bus unless that bus ride is longer than 1 hour in duration, otherwise alternate transportation should be arranged.
- **Above 350mg/dl, with urine ketones, [and not feeling well](#)**
 - Treat as described on page 6 & 7
 - Notify parent(s)/caregiver(s), [and](#) arrange for alternate transportation.

- Treating lows before bus at 70 mg/dL
- Allowing child to board the bus starting at 71 mg/dL – 350 mg/dL



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Insulin Pump PPA



PRESCRIBER AUTHORIZATION
STUDENT INFORMATION



Student's Name:
Date of Birth:
Age:
Allergies:

Pump Therapy

Start Date:

Stop Date: (***)

Brand/Name of Pump: (***)

Name of Medication: Insulin (***)

Dosage:

Correction/Supplemental Dose	Time Frame	Bolus Ratio	Time Ratio
Blood sugar - (***) = x units (***)	---	*** unit per *** grams of carbohydrate at *** meals and snacks	*** unit per *** grams of carbohydrate at *** meals and snacks
Blood sugar - (***) = x units (***)	---	*** unit per *** grams of carbohydrate at *** meals and snacks	*** unit per *** grams of carbohydrate at *** meals and snacks
		*** unit per *** grams of carbohydrate at *** meals and snacks	*** unit per *** grams of carbohydrate at *** meals and snacks
		*** unit per *** grams of carbohydrate at *** meals and snacks	*** unit per *** grams of carbohydrate at *** meals and snacks
		*** unit per *** grams of carbohydrate at *** meals and snacks	*** unit per *** grams of carbohydrate at *** meals and snacks
		*** unit per *** grams of carbohydrate at *** meals and snacks	*** unit per *** grams of carbohydrate at *** meals and snacks

For pump failure (remove pump and resume insulin injections) - (See page 6 of Diabetes Medical Plan):

Notify caregiver(s) so long-acting insulin can be administered.

Basal Insulin Dose (if available)

Name of Medication: **Insulin (***)** Dosage: *** unit(s); Route: Subcutaneous one dose as soon as possible after pump failure

**Family is NOT required to leave long-acting insulin at school or transport long-acting insulin to and from school. **

Remember you must wait 3 hours between correction factor dose administrations but give meal dose as scheduled.

The above rapid acting insulin may be administered by syringe injection for insulin to carbohydrate ratio and correction factor doses.

Student does not need to go home (unless he/she meets criteria on page 6 of Diabetes Medical Plan)

Reason for taking medication:

Potential side effects/contradictions/adverse reactions:

Treatment order in the event of an adverse reaction:

Control blood sugars

Low blood sugars. See Medical Plan

See pages # 6, 7, & 8 of Medical Plan

SPECIAL INSTRUCTIONS

Is the medication a controlled substance?

No

Is self-medication permitted and recommended?

{Yes/No/Supervised:27084}

If "yes" I hereby affirm this student has been instructed on proper self-administration of the prescribed medication.

Do you recommend this medication be kept "on person" by student?

{yes/no:28786}

Unopened insulin must be refrigerated

Name of Licensed Healthcare Provider:

Date: 05/28/24

Phone: (205) 638-9107 Fax: (205) 638-9821

The above form is endorsed by the COA Diabetes Team; outside forms are not accepted. UAB Department of Pediatrics, Division of

Endocrinology, Suite CPPIII M30

1801 4th Avenue South, Birmingham, AL 35233 tel: (205) 638-9107 fax: (205) 638-9821 www.peds.uab.edu www.childrenal.org

- No longer including basal rates
 - With so many pumps being automated no need for rates as these are adjusted by the pump
- Adding Long Acting dose for pump failure
 - Guardians are not required to leave long acting insulin at school, but provided for you IF it is available.



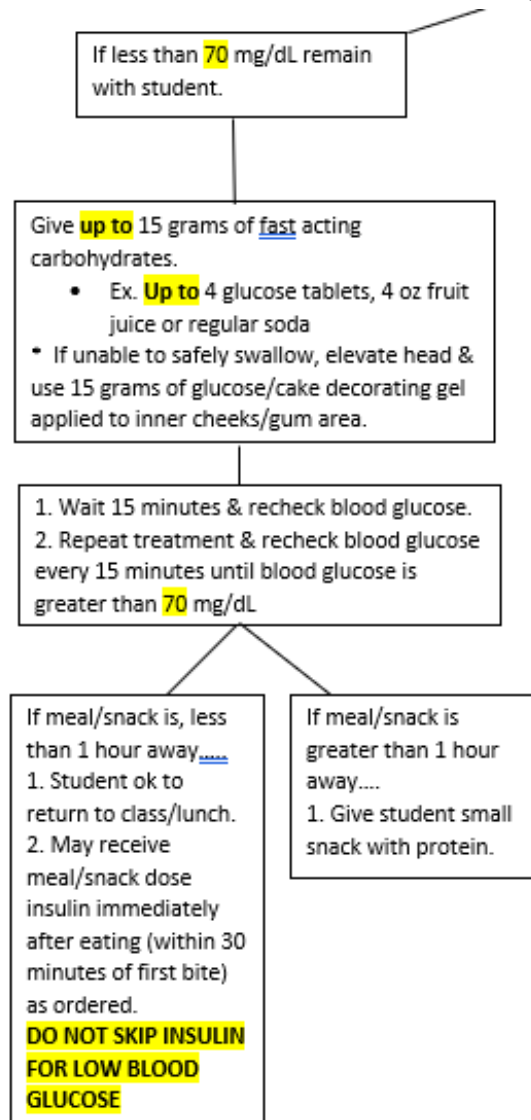
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Scenario #1

Sally, a 6 year old student, is sent to your office by her teacher because she is complaining of a headache. You check her blood glucose and it reads 64 mg/dL. She had lunch an hour ago, and snack time is 2 hours away for her class. What do you do?



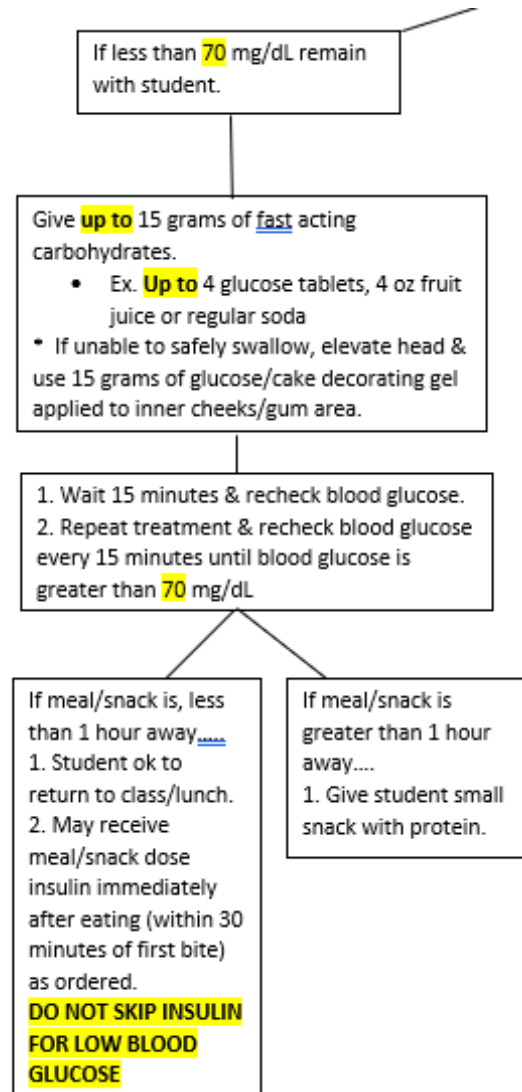
Scenario #1



1. Give up to 15 grams of fast acting carbs
2. Wait 15 minutes, recheck blood glucose.
3. Recheck blood sugar is 84 mg/dL.



Scenario #1



- She is above 70 mg/dL
- Snack time is 2 hours away
- Give a small snack with protein.
 - Ex. Carton of milk, peanut butter crackers, cheese crackers



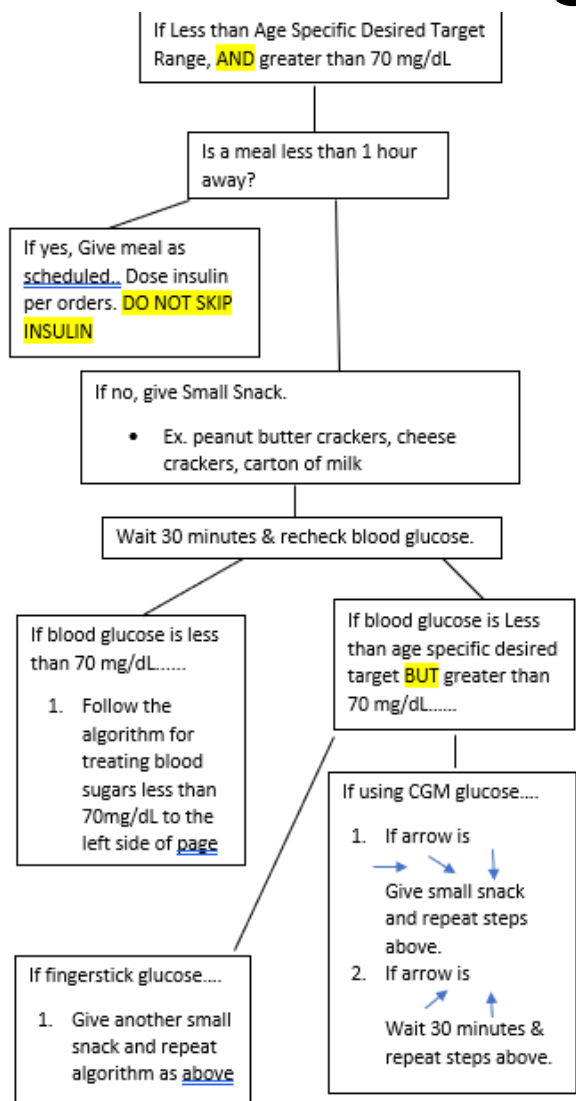
Scenario #2

Jack, a 5 year old student, comes to your office before lunch for his scheduled blood glucose check. It reads 86 mg/dL. What do you do?



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Scenario #2



- It is lunch time. Blood sugar is greater than 70mg/dL although less than desired target.
- Give meal and dose as ordered
- Do NOT skip insulin

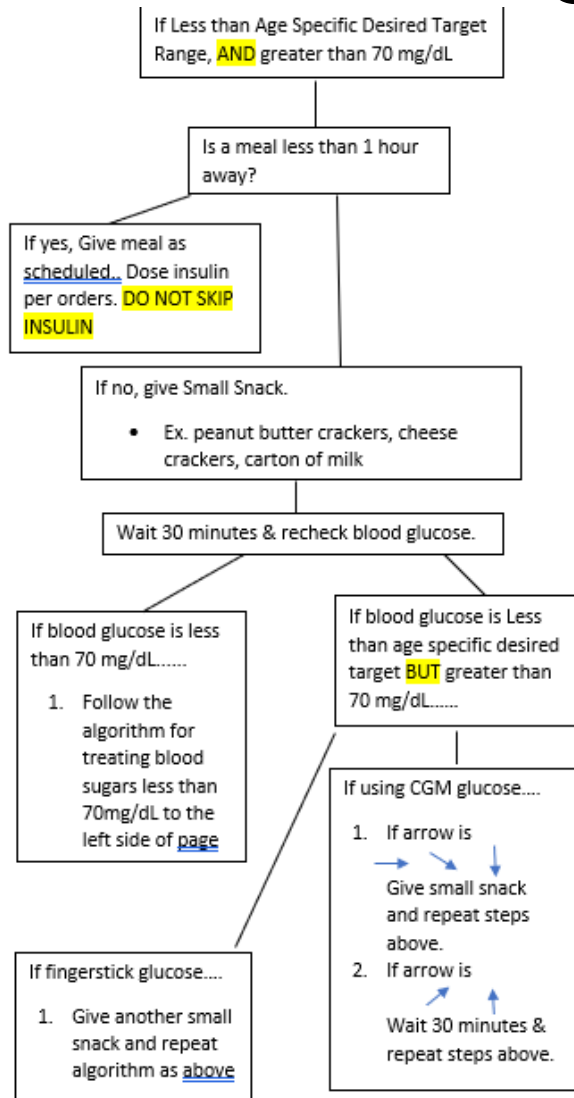


Scenario #3

Suzy, a 12 year old student, comes to your office mid morning complaining of “feeling low”. You look at her Dexcom and it says she is 74 mg/dL. You doublecheck with a fingerstick since she is symptomatic and it confirms accuracy of Dexcom. She has no scheduled upcoming meal or snack. What do you do?



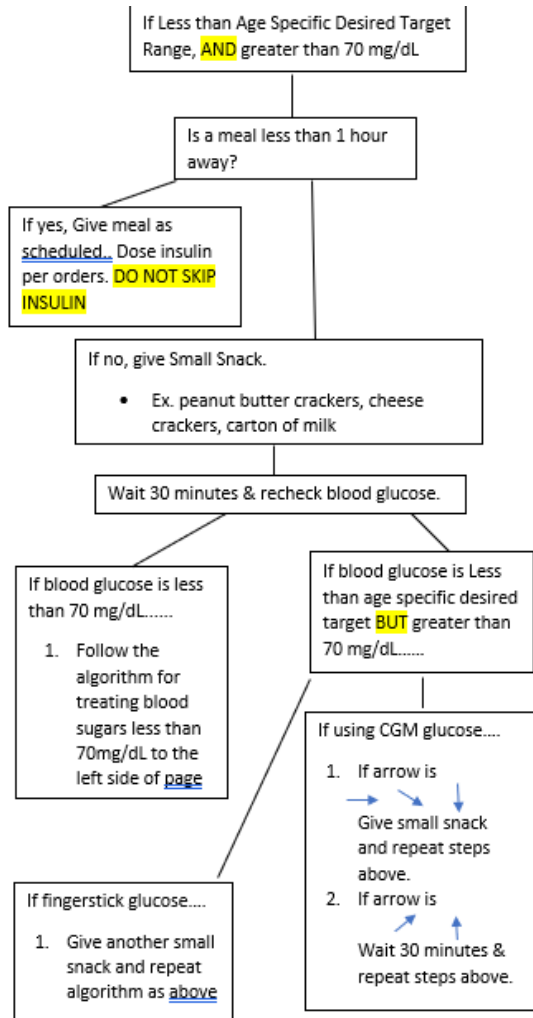
Scenario #3



- She is less than desired target but greater than 70 mg/dL.
- No upcoming meal/snack.
- Give small snack and recheck blood glucose in 30 minutes.
- Dexcom reads 79



Scenario #3



- Arrow is indicating rising slowly.
- Wait 30 minutes and recheck blood glucose again.
- Recheck Dexcom reading is 104 →
- She is corrected!

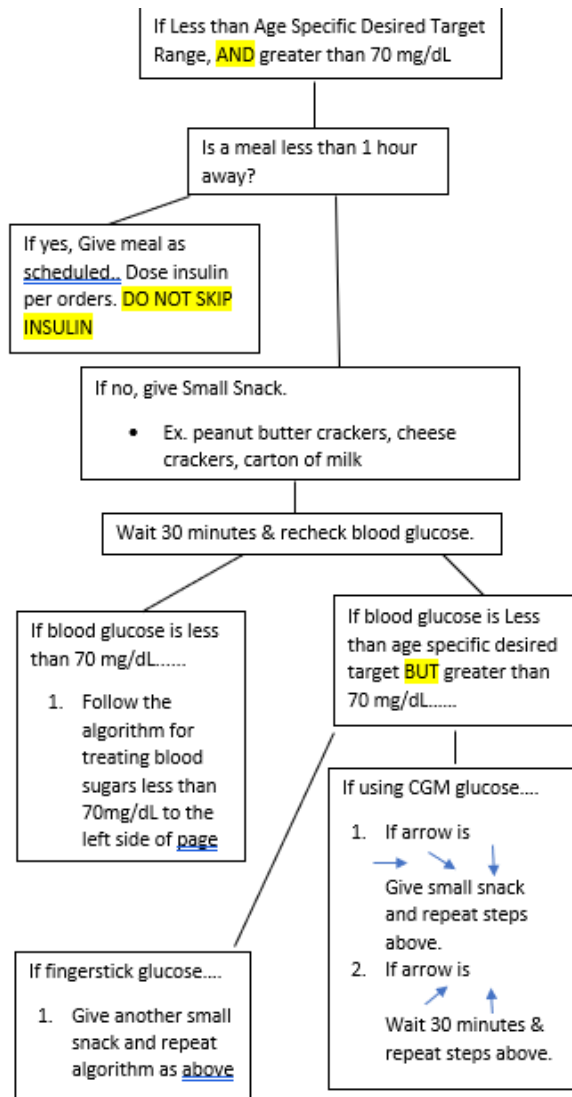


Scenario # 4

Johnny, is a 10 year old student, who comes to your office 30 minutes after PE complaining of feeling weak. Libre 3 reads 72 mg/dL. Fingerstick confirms accuracy. Lunch is 2 hours away. What do you do?



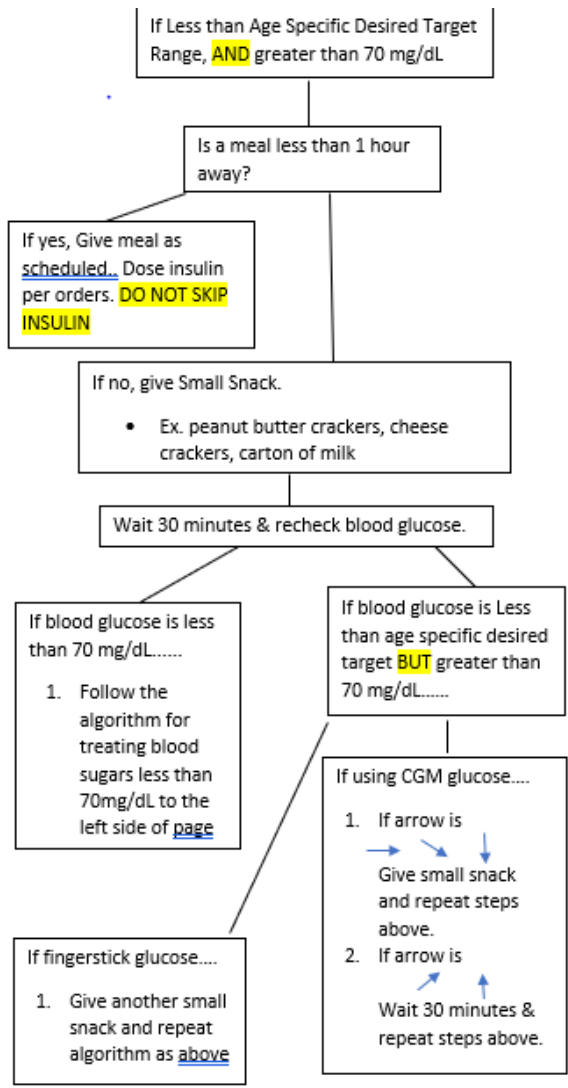
Scenario # 4



- Less than desired target, greater than 70mg/dL.
- Give small snack, he wants peanut butter crackers
- Recheck in 30 minutes.
- Libre 3 reads 60mg/dL, confirmed by fingerstick

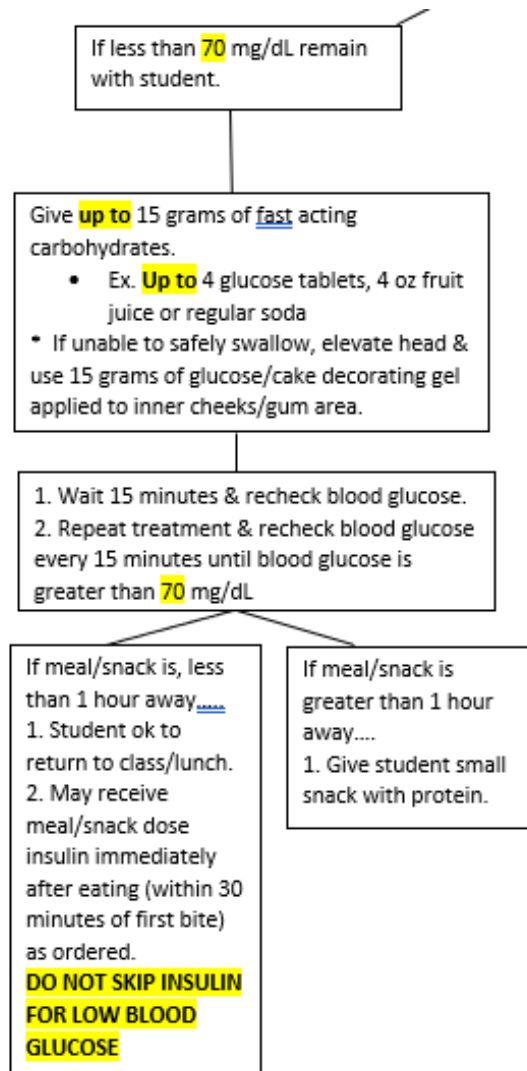


Scenario # 4



- Change to less than 70mg/dL arm of the algorithm.

Scenario # 4



- Give 15 grams fast acting carbs
- Wait 15 minutes and recheck blood glucose.
- Recheck is 94 mg/dL
- Give small snack with protein.





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InPen

Gaby Jelks, RN, MSN



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InPen

**FIRST FDA-CLEARED
SMART INSULIN PEN**
DATA-DRIVEN MDI
THERAPY WITH
INPEN™ SMART
INSULIN PEN

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Further, Together



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DIABETES TECHNOLOGY FOR ALL MDI USERS

INPEN™



First FDA-cleared
smart insulin pen*

Launched in US (Dec 2017)

Smart Insulin Pen

- 12-month battery life and warranty
- Delivers 0.5-unit doses
- Compatible with:
 - Novolog®
 - Humalog®
 - Fiasp®
- Available in Pharmacy for type 1 & type 2 diabetes

Take the right amount of insulin at the right time

- Tracks active insulin
- Reminds to dose
- Calculates personalized doses
- Automatically logs doses
- Creates shareable reports
- Syncs with CGMs and glucose meters



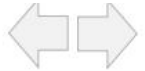
*Smart insulin pens connect wirelessly to the user's smartphone device and provide dosing calculations and reminders while integrating with advanced CGM systems.

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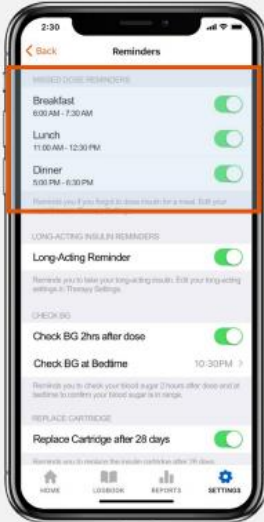


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TYPES OF REMINDERS



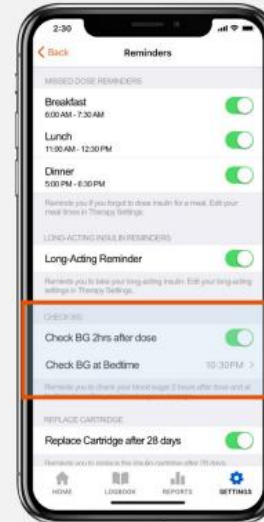
Missed Meal Dose



Missed Long-Acting



Check BG Reminder



Replace Cartridge



Reminders may help adherence to a diabetes treatment plan



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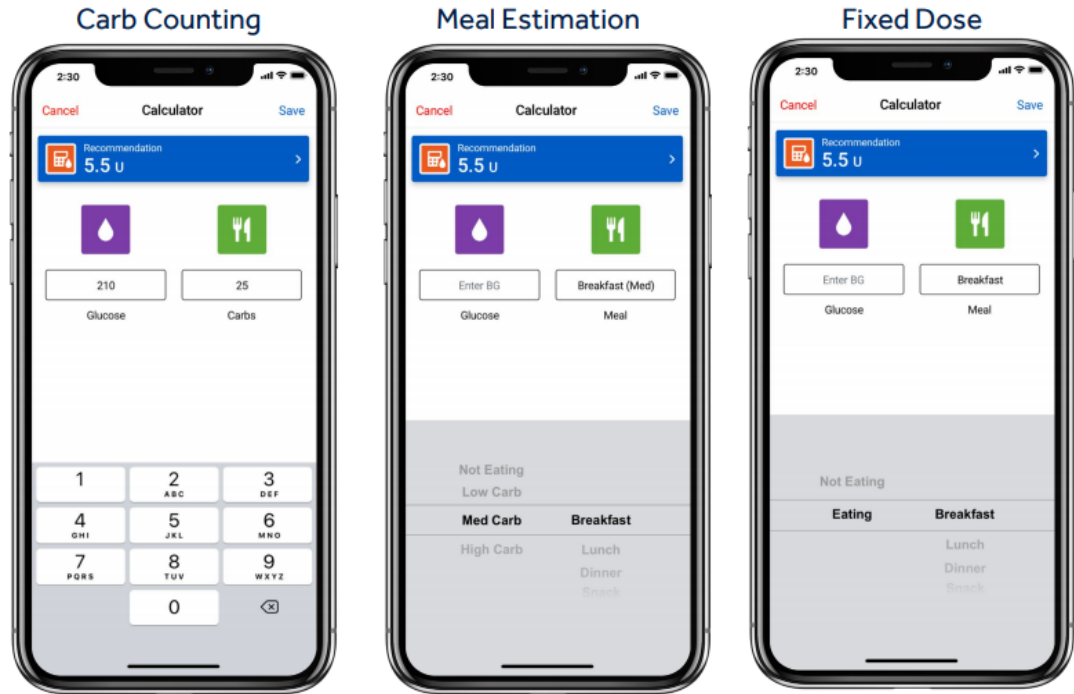
DOSE CALCULATOR

INPENT™ AUTOMATICALLY TRACKS INSULIN DOSES IN THE APP

The use of a bolus calculator is associated with a 0.7-1.0% reduction in A1C.¹⁻³

MDI patients using a bolus calculator report:

- Reduced fear of hypoglycemia⁴⁻⁶
- Improved confidence in the accuracy of their insulin bolus dose⁴⁻⁶
- Increased treatment satisfaction⁴⁻⁶



1. Ziegler R, Cavan DA, Cranston J, et al. Use of an insulin bolus advisor improves glycemic control in multiple daily insulin injection (MDI) therapy patients with suboptimal glycemic control: first results from the ABACUS trial. *Diabetes Care*. 2013; 36(11):3613-3619.
 2. Kaufman FR, Holmstrom M, Carpenter S. Use of a plastic insulin dosage guide to correct blood glucose levels out of the target range and for carbohydrate counting in subjects with type 1 diabetes. *Diabetes Care*. 1999; 22(8):1252-1257.
 3. Anderson BO. Multiple daily injections in young patients using the easy BGC insulin calculator and compared to manual insulin and CTR. *Diabetes Diabetes*. 2009; 10(2):306-309.
 4. Barnard KD, Pankin CD, Young A, et al. Use of an automated bolus calculator reduces fear of hypoglycemia and improves confidence in dosage accuracy in patients with type 1 diabetes mellitus treated with multiple daily insulin injections. *J Diab Sci Tech*. 2012;8:144-149.
 5. Schmitt S, Melgaard M, Serflowski N, et al. Use of an automated bolus calculator in MDI-treated type 1 diabetes: the boluscal study, a randomized controlled-pilot study. *Diabetes Care*. 2012;35:984-990.
 6. Vallego-Mora M, Carrera M, Anacle M J, Linares F, et al. Bolus Calculator Reduces Hypoglycemia in the Short Term and Fear of Hypoglycemia in the Long Term in Subjects with Type 1 Diabetes (CBAD Study). *Diabetes Technol Ther*. 2017 19(7):402-409

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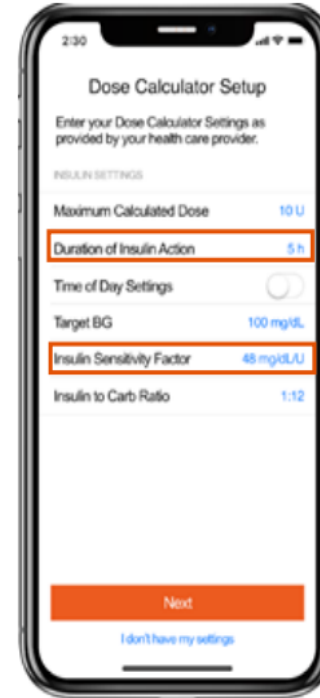
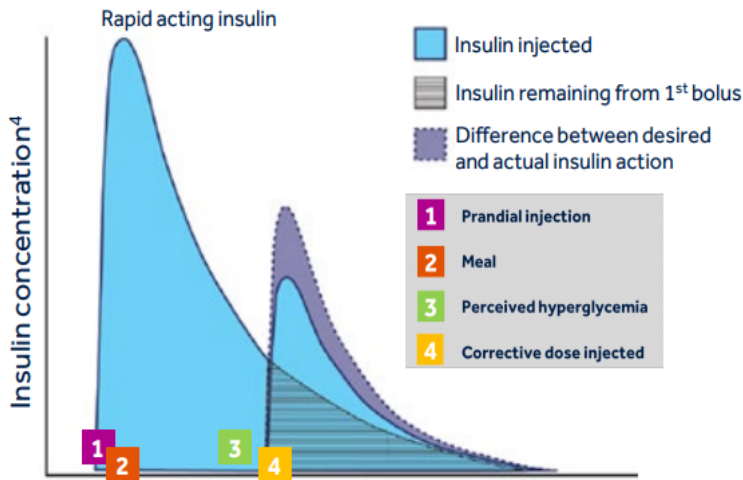


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ACTIVE INSULIN AUTOMATICALLY TRACKED WITH INPEN™



60% of insulin doses are taken with some insulin-on-board.¹⁻³



Available features to account for insulin-on-board

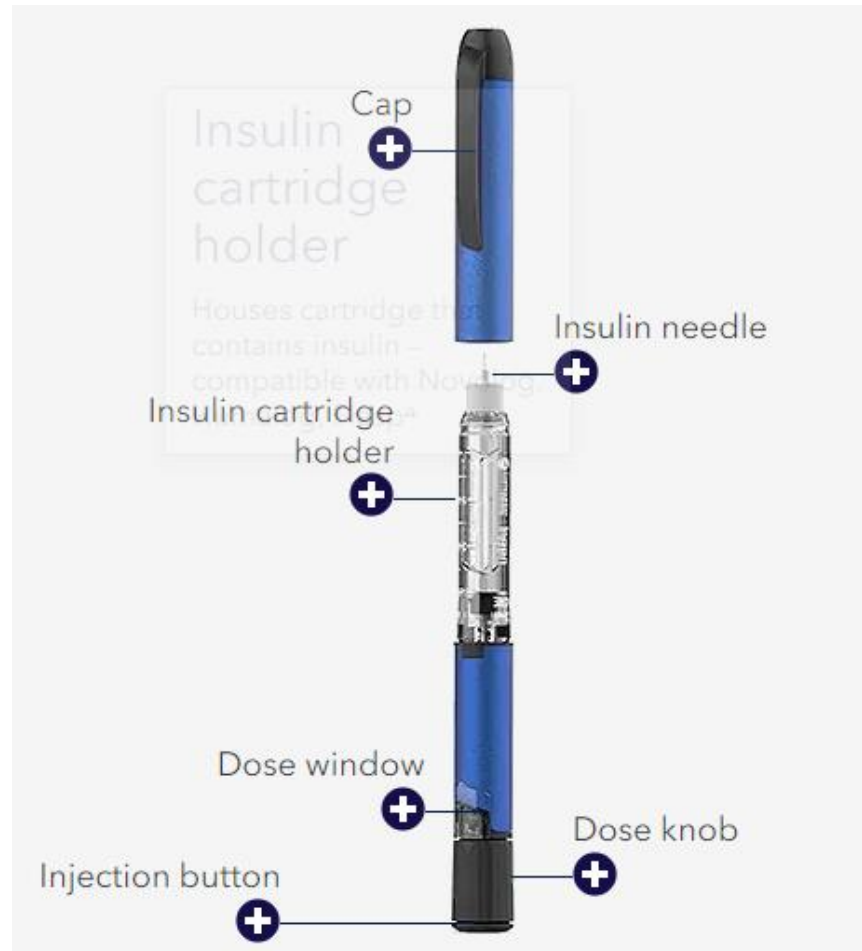
1. Ziegler R, Cavan DA, Cranston I, et al. Use of an insulin bolus advisor improves glycemic control in multiple daily insulin injection (MDI) therapy patients with suboptimal glycemic control: first results from the ABACUS trial. *Diabetes Care*. 2013; 36(11):3613-3619. 2. Kaufman FR, Halvorson M, Carpenter S. Use of a plastic insulin dosage guide to correct blood glucose levels out of the target range and for carbohydrate counting in subjects with type 1 diabetes. *Diabetes Care*. 1999; 22(8):1252-1257. 3. Anderson DG. Multiple daily injections in young patients using the ezy-BICC bolus insulin calculation card, compared to mixed insulin and CSII. *Pediatric Diabetes*. 2009; 10(5):304-309. 4. Heise T, Meneghini LF. *Endocrine Practice*. 2014;20(1):75-83.

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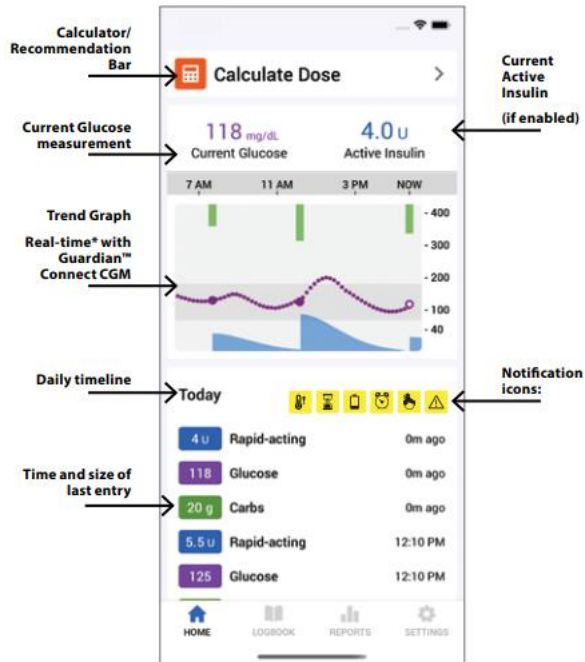
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InPen Insulin Delivery Device



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InPen App Home Screen



- Trend Graph

- Green Line = Carbohydrates

- Purple dot/Wave = Blood Glucose or CGM data

- Blue Wave = Rapid Acting Insulin on Board

Notification icons:

- Insulin Temperature
- Insulin Age
- Low InPen Battery
- Rapid-acting Reminder
- Long-acting Reminder
- Alert



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Dose Calculator



- Enter Blood Glucose, total Carbohydrates for meal/snack, OR Both
- Select Save
- Recommended rapid acting insulin dose is in blue bar at top of screen.
- Do NOT prime your pen before you have saved this dose calculation
- If you do not wish to dose, select cancel and no data will be saved



InPen- Lows



- If a low blood glucose is entered into calculator, it will prompt you to eat fast-acting carbs to be consumed with the meal/snack.
- Remember we like to treat the low first!



InPen- Manually Log Dose

8:34

Cancel Manually Log Dose Save

Dose Amount 1 U

Dose Time 05:45 PM

Rapid-Acting Long-Acting

InPen automatically logs your rapid-acting doses. Enter only long-acting doses and rapid-acting insulin doses not taken with InPen.

1 2 3
4 5 6
7 8 9
0

- Accurate insulin on board is KEY for InPen success.
- If you don't have the InPen device and are using the app only, in the logbook page, select "LOG DOSE"
- Enter rapid vs. Long Acting
- Enter total dose delivered and time administered
- SAVE!!!!



InPen Support, Instructional Videos, and User Guides

<https://www.medtronicdiabetes.com/products/inpen-smart-insulin-pen-system>



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InPen School Packet

□ **InPen Device** (See Treatment for Hyperglycemia/Hypoglycemia on pages 8, 10, & 11)

***The dose the Inpen App recommends is calculating the insulin on board so it may or may not match the same dose if you calculate it out.

Mealtime Dose – See medication prescriber/parent authorization form, labeled “meal dose” for dosage and route. This is always given for food. Verify the doses on the medication Prescriber form is the same doses that are in the dose setting in the app. Enter the amount of carbohydrates and the current blood sugar in the Inpen app. This will calculate the recommended dosing for that meal.

Correction Dose – Use medication authorization form labeled “correction dose”, for blood glucose above the target number. Verify that the doses match the correct doses on the medication authorization form and the dose settings in the app.

CORRECTION FACTOR DOSE SHOULD NOT BE GIVEN ANY CLOSER THAN 2 HOURS APART IF USING THE DOSING SUGGESTION FROM THE INPEN APP THAT INCLUDES SUBTRACTING INSULIN ON BOARD

- If **NO** correction factor is needed at meal/snack time, **NO** correction factor can be given for high blood sugar, until it has been a minimum of 2 hours after the meal/snack dose.

***The dose the Inpen App recommends is calculating the insulin on board so it may or may not match the same dose if you calculate it out.





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Baqsimi/Gvoke

Sandie Manscill, RN, MSN



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Glucagon

- Glucagon is a hormone that raises a person's blood sugar by releasing stored glucose from the liver. This is done naturally in a person without diabetes.
- In a person with diabetes on insulin, the pancreas no longer releases glucagon to make sure the blood sugar does not drop to low
- If a person with diabetes is having symptoms of a severe low blood sugar, you cannot harm them by giving them glucagon.
- For a person with diabetes on insulin, glucagon will only raise the blood sugar, on average, 50-130 points.



When should a form of glucagon be given:

- Inability to swallow
- Disorientation
- Combativeness
- Having a seizure
- Loss of Consciousness



There are now 3 different types of glucagon: (for the purpose of this presentation the word glucagon refers to any of the 3 following forms of this medication)

1. Baqsimi
 2. Gvoke
 3. Glucagon/Glucagen Emergency Kit
- It is according to insurance preference on which one is covered.
 - Your student should have an order that matches the form of glucagon they have at school.



All forms of glucagon require the same follow up management.

- It takes 10-15 minutes to start seeing the blood sugar increase and the symptoms of severe hypoglycemia begin to resolve
- Immediately after giving glucagon, place the student on either side (recovery position).
- Follow the steps in the student's DMMP (Diabetes Medical Management Plan) and school policy for calling 911 and notifying the student's caregiver.
- If the student does not respond after 15 minutes, another dose may be given, if available (it does not have to be the same form of glucagon ie. 1st is Baqsimi and 2nd may be glucagon kit)



Most common side effects of any form of glucagon:

- Nausea
- Vomiting
- Headache



Baqsimi 3 mg

Nasal Powder



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Facts about Baqsimi

- FDA approved for children 4 years old and older.
- It can be used even if the student had a cold with a stuffy/runny nose
- Comes in a yellow container wrapped in shrink-wrap (do not remove shrink-wrap until ready to use to keep the powder dry and away from moisture).
- Do not test the device before use, as it contains only one dose of medication and can only be used once
- **Caution: Do not press the plunger until ready to give the dose!**
- **Do not attempt to reuse as each container only contains 1 dose**



Remove the shrink-wrap by pulling the red stripe

www.baqsimi.com



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Open the lid and remove the device from the tube



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Hold the device between fingers and thumb. Do not push the plunger yet.



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Insert tip into one nostril until fingers touch the outside of the nose.



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Push the plunger firmly all the way in. Dose is complete when the green line disappears



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Storage of Baqsimi

- Does not need to be refrigerated
- Can be stored at a temperature up to 86 degrees F
- Keep in a cool dry place



Additional side effects of Baqsimi:

- Stuffy nose
- Runny nose
- Discomfort in the nose
- Redness in eyes
- Itchy nose, throat, eyes
- Watery eyes



Gvoke

HypoPen



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Gvoke

- Gvoke is a diluted ready to use form of glucagon
- The solution should be clear and colorless to pale yellow and free of particles
- Gvoke comes in a foil pouch and should be kept in the pouch until you are ready to use



Gvoke Dosing

- Gvoke is for children age 2 and older
- Recommended dose for ages 12 and older is 1 mg
- Recommended dose for ages 2-12 years is weight dependent
 - If less than 100 lbs. give 0.5 mg
 - If 100 lbs. or more give 1 mg



Gvoke comes in 2 doses

- HypoPen Autoinjector
 - 0.5 mg/0.1 ml
 - 1 mg/0.2 ml



Administration of Gvoke

- Administer the injection in the lower abdomen, outer thigh, or outer upper arm.





www.gvokeglucagon.com



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Pull Red Cap Off



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Push yellow end down on skin and hold 5 seconds. Window will turn red.



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Gvoke Facts

- Do not attempt to reuse Gvoke once it has been used. Each device only holds 1 dose.
- If there is no response after 15 minutes, an additional weight appropriate dose of Gvoke from a new device may be administered while waiting for emergency assistance.
- Store at controlled room temperature of 68° to 77°F
- Excursions in temperature permitted between 59° and 86°F
- Do not refrigerate or freeze or expose to extreme temperatures
- Store in original sealed foil pouch until ready to use
- Do not use Gvoke after the expiration date printed on the package



Questions



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