

# Managing Diabetes in School Can Be A Piece of Cake

Understanding Diabetes Orders and How to Handle Special Circumstances



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# Objectives

- Learn how to use medical orders to develop care plans in a school setting
- Review diabetes resources for schools
- Identify special situations in school related to insulin dosing
- Review of carbohydrate counting and resources available
- Digestion of nutrients and insulin action times
- Problem solving

# Sample IHP



## Diabetes Program

Diabetes Clinic-Main Campus Non-Urgent Phone: 414-266-3380

Diabetes Clinic- Main Campus Fax: 414-266-3964

Fox Valley Diabetes Clinic Non-Urgent Phone: 920-969-7970

Fox Valley Diabetes Clinic Fax: 414-337-7203

Diabetes Clinic-All Sites Urgent Phone Line: 414-266-2860

## DIABETES MANAGEMENT MEDICAL ORDERS FOR 2018-2019 SCHOOL YEAR

Student:

School name:

School/ daycare phone:

School/ daycare fax:

### TYPE OF DIABETES:

Type 1 Diabetes

### TESTING BLOOD SUGARS AT SCHOOL

- This student will test blood sugar:
  - Before all meals and insulin dosed snacks at school
  - As needed for high and low blood sugars
  - As needed for higher activity levels, negotiated by parent/guardian and the school nurse
  - At additional testing times negotiated with parent/guardian and school nurse per the CHW Management Protocol

### TREATMENT OF LOW BLOOD SUGAR

- For this student a low blood sugar is:
  - Blood sugar under 70 mg/dL
  - Treat with 10 to 15 grams of carbohydrate
- Follow the CHW Treatment Protocol for low blood sugar
- Glucagon dose for this student is: 1.0 mg
- Follow CHW treatment protocol when glucagon is used.

### TREATMENT FOR HIGH BLOOD SUGAR

- For this student a high blood sugar is:
  - Blood sugar over 250 mg/dL
  - Give insulin if applicable in the insulin dosing orders.
- This student will check urine or blood ketones:
  - Yes, when blood sugar is over 250 mg/dL
- Follow the CHW Treatment Protocol for high blood sugar

### CONTINUOUS GLUCOSE MONITOR (CGM)

Yes, Student wears a CGM

Type of CGM this student wears is: Dexcom

High Alert for this student is:

-Blood sugar over 350 mg/dL

Low Alert for this student is:

-Blood sugar under 70 mg/dL

Scheduled CGM checks can be negotiated by parent/guardian and the School Nurse

Refer to CHW Treatment Protocols for Guidance



Kids deserve the best.

# Sample IHP: Insulin Injections

## INSULIN DOSING ORDERS

<b>Insulin required and delivered by:</b>	Insulin Pen
<b>Type of Insulin to be given at school:</b>	Rapid/short: Humalog
<b>Insulin to be given by:</b>	Approved School Personnel, Student and with supervision
<b>Student skills for using insulin:</b>	Counts and calculates carbohydrates, Determines correct insulin dose for carbohydrates consumed, Draws up correct insulin dose and Gives own injection
<b>Adjusting Insulin Doses:</b>	Parents/guardians may adjust insulin carb ratios for meals within the range of 1.0 unit for 12 to 18 grams carbohydrates.
<b>Insulin Dose for Meals:</b>	AM Snack, Lunch and PM Snack
<b>Give Insulin:</b>	Before eating (eat within 5 minutes)

## Flexible Insulin Dose with Calculated Correction Dose:

<p>This student is on flexible management and may have different carbohydrate intake at each meal/snack.</p> <p><u>Insulin to Carb Ratio Dosage</u>=total grams of carb divided by the carb ratio:</p> <p>AM Snack: 1.0 unit for 15 grams carbohydrate          Lunch: 1.0 unit for 15 grams carbohydrate          PM Snack: 1.0 unit for 15 grams carbohydrate</p> <p><u>Calculated Correction Dose:</u>          Use this correction dose when blood sugar is above 150 mg/dL:</p> <p>Blood Sugar Level minus <u>150</u> divide by <u>40</u> = ____ Units to correct blood sugar.</p> <p>Add this to the Calculated Carbohydrate Dosage at meal/snack time. Use the calculated dose also for non-meal correction only if ordered.</p>
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## Insulin for Correction: Non Meal Time:

<p>Yes</p> <p><u>Options:</u>          Use Calculated Correction Insulin Dose  <u>Criteria for giving extra insulin for correction:</u>          -Extra insulin is given if it has been more than 2 hours since last dose was given and it is not a meal          -Blood glucose level is over 250 mg/dL          -Do not exceed 2 extra doses in one school day          -Blood glucose must be checked in 2 hours after correction dose is given          -Notify parents when extra doses are given at school</p>
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## ADDENDUM

These are the Diabetes Medical Management orders for this Student. This includes all diabetes medication orders. Any changes listed above replace any previous insulin and management orders. Use the "Children's Hospital of Wisconsin School Diabetes Management Protocols" (Go to [www.chw.org](http://www.chw.org) and navigate to the diabetes specialty page) for reference when negotiating the student's school schedule and management with the parent/guardian.

These orders are approved and reviewed by:  
 PETER M WOLFGRAM, MD  
 3/14/2019  
 8:13 AM

# Sample IHP: Insulin Pump

## ORAL DIABETES MEDICATION GIVEN AT SCHOOL:

No oral diabetes medications

## INSULIN DOSING ORDERS

<b>Insulin required and delivered by:</b>	Insulin Pump
<b>Type of Insulin to be given at school:</b>	Rapid/short: Humalog
<b>Insulin to be given by:</b>	Student and with supervision
<b>Student skills for using insulin:</b>	Counts and calculates carbohydrates, Determines correct insulin dose for carbohydrates consumed, Draws up correct insulin dose and Gives own injection
<b>Adjusting Insulin Doses:</b>	Parents/guardians are trained to adjust settings in pump throughout the year
<b>Insulin Dose for Meals:</b>	Lunch and PM Snack
<b>Give Insulin:</b>	Before eating (eat within 5 minutes)

## Insulin Pump:

This Student is: Established pump user

This student will use the device to enter total grams and the blood sugar to calculate the amount of insulin for the pump to deliver. Use the Insulin Pump Bolus Calculator with the Omnipod Pump.

### **Student pump abilities/skills:**

- Boluses correct amount for carbohydrate consumed
- Inserts new infusion set
- Performs temporary basal changes
- Troubleshoots alarms or malfunctions

### **Insulin for Correction: Non Meal Time:**

Yes

#### Options:

Insulin Pump Bolus Calculator

#### Criteria for giving extra insulin for correction:

- Extra insulin is given if it has been more than 2 hours since last dose was given and it is not a meal
- Blood glucose level is over 200 mg/dL
- Do not exceed 2 extra doses in one school day
- Blood glucose must be checked in 2 hours after correction dose is given

## ADDENDUM

These are the Diabetes Medical Management orders for this Student. This includes all diabetes medication orders. Any changes listed above replace any previous insulin and management orders. Use the "Children's Hospital of Wisconsin School Diabetes Management Protocols" (Go to [www.chw.org](http://www.chw.org) and navigate to the diabetes specialty page) for reference when negotiating the student's school schedule and management with the parent/guardian.

These orders are approved and reviewed by:

PETER M WOLFGRAM, MD

3/11/2019

11:07 AM



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## Resources for schools

Many patients need to have an annual diabetes care plan on file at their school. A copy also needs to be on file at the Children's Hospital of Wisconsin diabetes program.

- [School plan instruction sheet \(PDF\)](#)
- [School plan worksheet \(PDF\)](#)
- [Diabetes emergency action plan \(PDF\)](#)
- **NEW!** [School diabetes management protocols \(PDF\)](#)
- **NEW!** [Age Related Guidelines for Diabetes: What to look for in children with diabetes, Children's of Alabama](#)
- [Managing diabetes safely in the school setting: A framework for collaborative care \(PDF\)](#)
- [Diabetes training for school staff](#)
- [American Diabetes Association \(ADA\) Safe at School for children with diabetes](#)
- [Wisconsin Department of Health Services: A resource guide for Wisconsin schools and families](#)

### [Resources For School:](https://www.chw.org/medical-care/diabetes-program/resources-for-schools)

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# Special Situations in Schools

- Field Trips
- Physical Activity and Sports
- Disaster Planning
- Supervision Requirements
- Lantus at School
- Sick Day
- Insulin Dosing with CGMs
- Insulin Dosing Between Meals

# Field Trips

- Notify parents 1 to 2 weeks in advance of all specialized activities, field trips or parties.
- Have plan in place for teachers/office staff to notify nurse of all trips scheduled for the year
- Keep list of supplies needed for all trips away from school.



# Physical Activity and Sports

- Always have fast-acting carbs available at times of physical activity and sports
- Student should not participate if ketones are moderate to large.
- If blood sugar is less than 70 or over 350, the student should not participate until blood sugar is corrected.

# Disaster Planning

- Reviewing a disaster plan with parents can provide comfort in knowing the school is considering all situations for their child's safety.
- It is the school's responsibility to determine a plan for all types of disasters.
- Evacuation
  - All diabetes supplies should be easily accessible if need arises
- Lockdown
  - Fast-acting glucose always be available to student

# Supervision Requirements

- All students have varied levels of independence with diabetes care
- All elementary and middle school students need guidance and supervision for meal-time dosing
- Most high school students can independently care for their diabetes
- The student, parent, school staff and medical management team should jointly determine level of supervision needed

# Lantus at School

- Lantus is long-acting insulin given once per day
- It is usually given at home in the evening
- May be instances where Lantus will be asked to be given at school if medical team is not certain it is being given at home.

# Sick Day

- If a student comes to school sick or becomes sick
  - Check blood sugar
  - Check urine ketones
  - Offer sugar-free fluids
  - Call parents
  - May need to arrange for student to be excused from school

# Insulin Dosing with CGMs

- FDA approved for dosing
  - Dexcom G5 (with calibrations)
  - Dexcom G6
  - Libre
- Trending arrows can be used to determine dosing
  - May be using Blue Loop app to determine dosing

# Insulin Dosing with CGMs

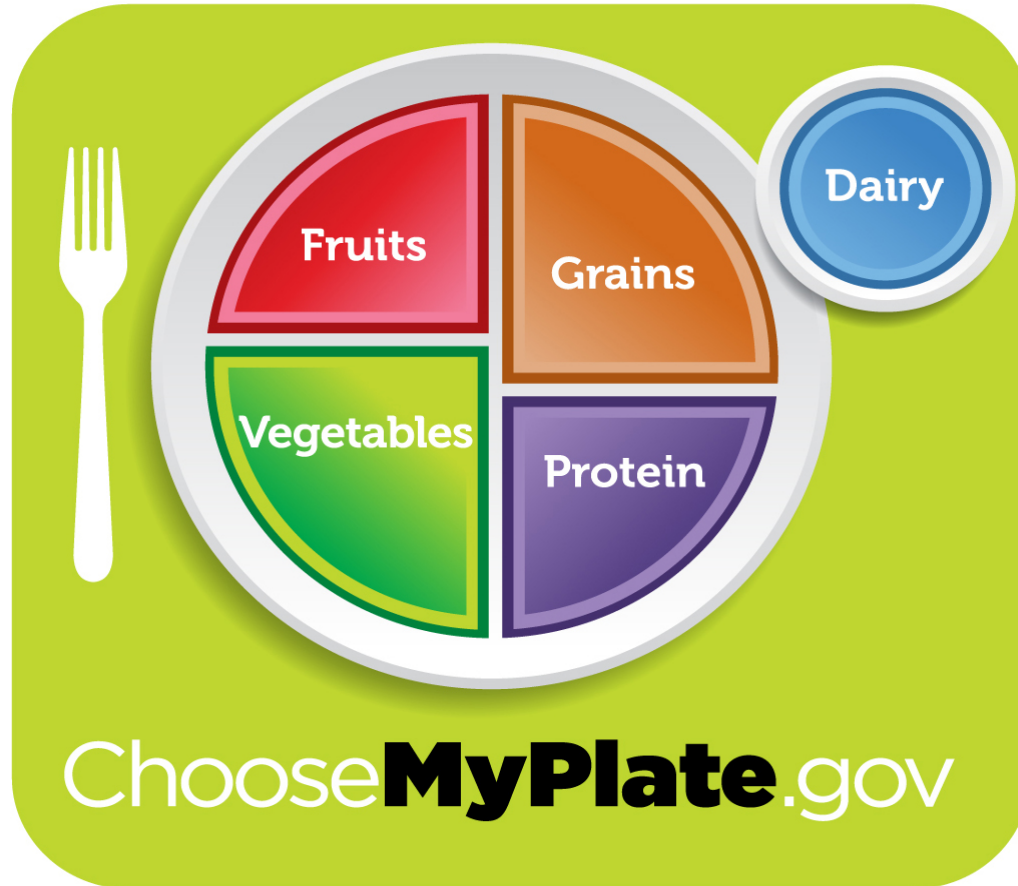
- If parent requests directional arrow integration, consider the following:
  - Use around gym or recess
  - Use at end of school day before boarding a bus
  - Determine range or management before taking a test or exam
  - Refer to Endocrine Society Guidelines

# Insulin Dosing Between Meals

- Students may need an extra dose of insulin at a non-meal time.
- Insulin doses must be at least two hours apart.
- May be able to dose for high blood sugar or carb amount individually
- Dietician will review examples



# Carbohydrate Recognition



# Carbohydrate Counting Game - Kahoot

1. Open your Kahoot app or Go to Kahoot.it
2. Enter game pin from screen
3. Choose username – displayed on screen
4. Rapid fire – 10s to answer each question
5. The faster you answer the higher the score

# Importance of Accuracy



The image shows a box of Cinnamon Chex cereal and its corresponding nutrition facts label. The box features the brand name 'Cinnamon Chex' in large red letters, with 'Simply Nutritious' above it and 'With a Touch of Real Cinnamon' below. It also highlights 'Gluten Free' and 'No artificial flavors or colors!'. The nutrition facts label is positioned to the right of the box, providing detailed information on serving size, calories, and various nutrients.

**Nutrition Facts**  
 Serving Size  $\frac{3}{4}$  cup (30g)  
 Servings Per Container about 13

Amount Per Serving	Cinnamon Chex	with $\frac{1}{2}$ cup skim milk
<b>Calories</b>	120	160
Calories from Fat	20	20
<b>% Daily Value**</b>		
<b>Total Fat</b> 2g*	<b>3%</b>	<b>3%</b>
Saturated Fat 0g	<b>0%</b>	<b>0%</b>
Trans Fat 0g		
Polyunsaturated Fat 0g		
Monounsaturated Fat 1.5g		
<b>Cholesterol</b> 0mg	<b>0%</b>	<b>1%</b>
<b>Sodium</b> 180mg	<b>8%</b>	<b>10%</b>
<b>Potassium</b> 40mg	<b>1%</b>	<b>7%</b>
<b>Total Carbohydrate</b> 25g	<b>8%</b>	<b>10%</b>
Dietary Fiber 1g	<b>4%</b>	<b>4%</b>
Sugars 8g		
Other Carbohydrate 16g		
<b>Protein</b> 1g		

# What should I do if no carbohydrate information is available?

- Always use a resource
  - Figwee app
  - CalorieKing
  - MyFitnessPal
  - USDA Nutrient Database
  - At the very least use a search engine.
    - I.e: nutrition information for grapes

# Sugar, Fiber, Fat and Protein

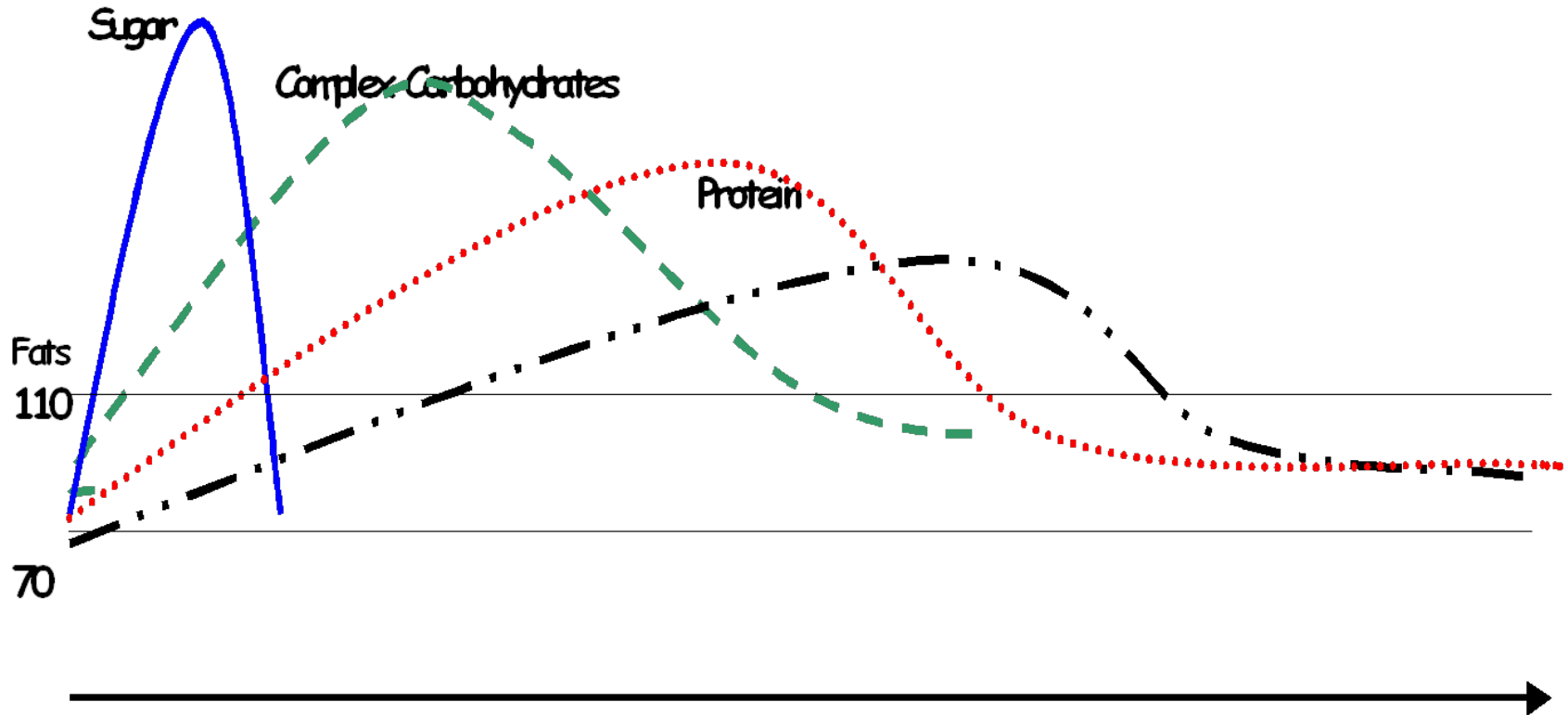
- Sugar: simple carbohydrate that is rapidly broken down and absorbed in your body
  - Found in juice, applesauce, raisins, sugary cereal, candy, frosting
- Fiber: carbohydrate that is not fully broken down in your body
  - Found in fruit, vegetables, whole grains and beans/legumes
- Fat and Protein:
  - Found in meat, cheese, nuts, seeds, eggs and added fats like butter, mayo and oil
- Fat/Protein foods help you feel full but make sure to eat fat/protein in moderation

# Fiber, Fat and Protein

- Slow down digestion of carbohydrates
- Cause a gradual rise in blood sugars



# Nutrient Breakdown



# Let's Put It All Together

- Insulin to carbohydrate ratio is 1 unit : 15g
- Meal:
  - 1 cup macaroni and cheese = 45g
  - 1 medium peach = 15g
  - 1 cup milk = 12g
  - 1 cup raw broccoli = 5g



- How many grams can you count?
- How much insulin will you need?



# Example Continued...

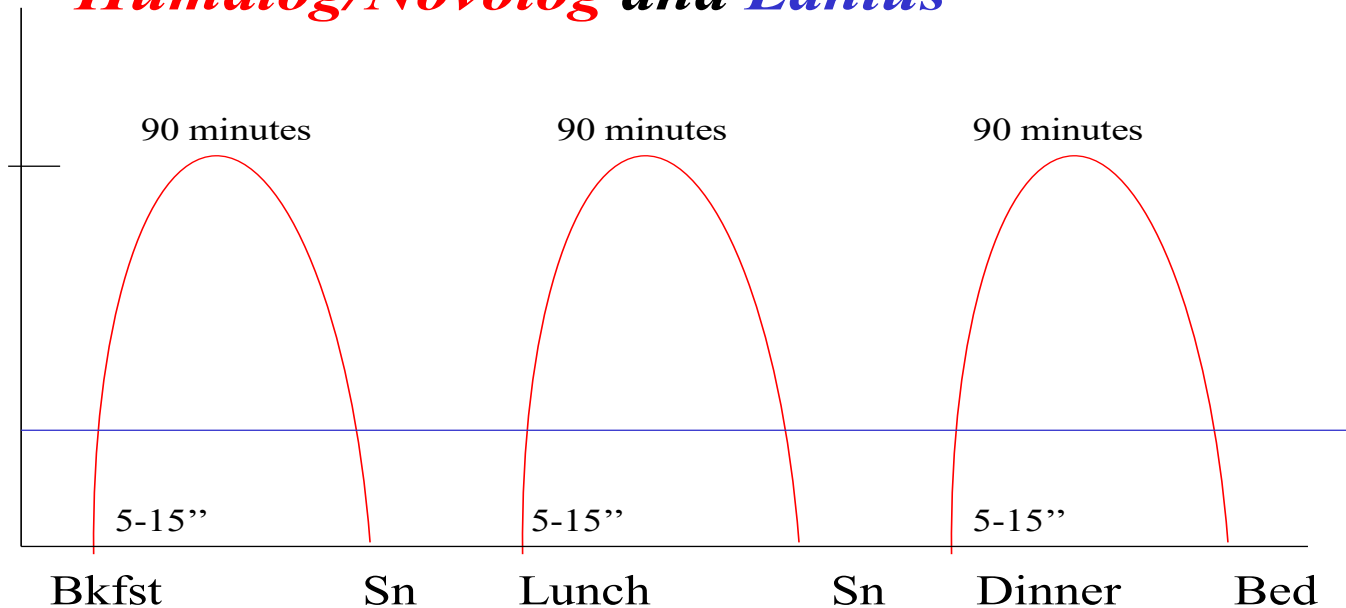
- Correction is 1 unit insulin for every 40mg/dL over 150 mg/dL blood sugar
  - Our student's blood sugar is 360mg/dL
- How much insulin should you provide for this meal (include food dose on previous slide)?

# We Forgot The Cake

- It is Savanna's birthday today and her dad has brought in cupcakes topped with frosting ( ~30g carbohydrates)
- What would you do if:
  - It was at lunchtime?
  - It was an hour after lunch had been dosed?
  - It was 3 hours after lunch had been dosed?

# Review of Insulin Action Time

## *Intensive Insulin Management with Humalog/Novolog and Lantus*



# If the cupcake is consumed at lunchtime.

- Add grams of carbohydrates in cake to carbohydrates in meal
- $77\text{g} + 30\text{ g carbohydrates} = 107\text{g}$
- BG was 360
  
- Calculate food and correction dose and give injection per plan

# If the cupcake is consumed 1 hour after lunch time.

- **Calculate lunch correction and dose per plan**  
10.5 units of insulin
- **Count carbohydrates in cake and use insulin to carb ratio to calculate insulin needed to cover.**  
 $30\text{g}/15 = 2$  additional units of insulin
- **Give second dose for cake only, no correction**

# If cake is consumed 3 hours after lunch.

- **Count carbohydrates in cake and use insulin to carb ratio to calculate insulin needed to cover.**  
 $30\text{g}/15 = 2$  additional units of insulin
- **Review school plan to see if a correction dose is indicated outside of meal time. If so, add calculation to determine total dose.**

# Dosing Special Occasions

If sweets are added to the meal	Add carbohydrates of sweet to the total carbohydrates and dose like a typical meal
If sweets are consumed an hour after the meal	Give a dose using the insulin to carbohydrate ratio to cover the sweets only – do not give a correction
If sweets are consumed 2 hours or more after the previous dose.	Consult school plan or discuss with family to see if a correction is necessary. Calculate dose same as typical meal.

# Where to find resources from this presentation

- CHW resources can be found on the website, [www.chw.org/diabetes](http://www.chw.org/diabetes)



# Questions?