Student Insulin Plans – User Guide

January 2023

Providing an overview of the Student Insulin Plans for School Health Partnership Nurses, Diabetes Teams, and other health care providers.

nova scotia health
Primary Health Care and
Chronic Disease Management
Diabetes Care Program of Nova Scotia

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1. PURPOSE OF THIS USER GUIDE

This User Guide provides an overview of the Student Insulin Plans for School Health Partnership Nurses, Diabetes Teams, and other health care providers as needed.

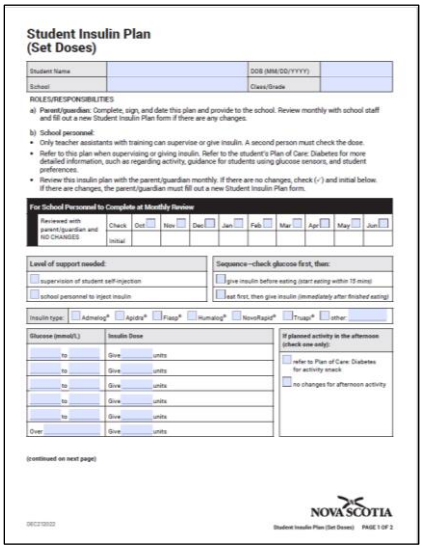
- The **Student Insulin Plans Workbook** – found in Appendix A – provides the opportunity to practice determining the insulin dose using the Student Insulin Plans, based on different scenarios.
- The **Approved Apps User Guide** – found in Appendix B – provides instructions for app use.

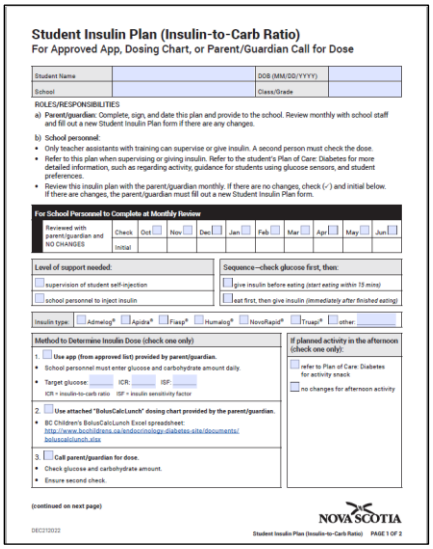
2. INTRODUCTION

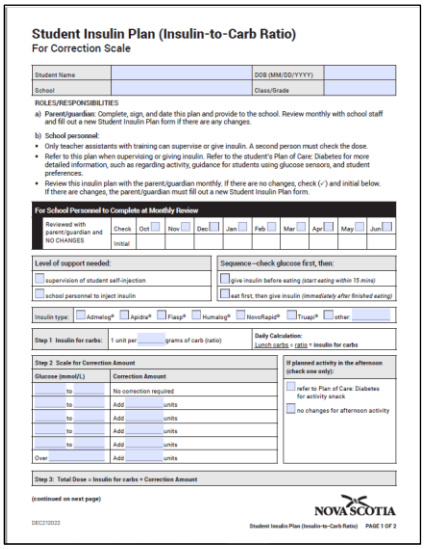
The Student Insulin Plans are intended to guide the determination of the lunch time insulin dose. The appropriate plan will be filled out by the parent/guardian and provided to the school. The plan will be used daily by the Teacher Assistant (TA) who will be administering or supervising the student's lunch time insulin injection.

THERE ARE 3 STUDENT INSULIN PLANS:

1. **Set Doses:** For students on a set dose (for the food amount) and using a scale (for the correction amount).
2. **Insulin-to-Carb Ratio - For Approved App, Dosing Chart, or Parent/Guardian Call for Dose:** For students on a flexible dose using an Insulin-to-Carb Ratio (for the food amount) and using an Insulin Sensitivity Factor (or Correction Factor) (for the correction amount).
3. **Insulin-to-Carb Ratio - For Correction Scale:** For students on a flexible dose using an Insulin-to-Carb Ratio (for the food amount) and using a scale (for the correction amount).


Student Insulin Plan
(Set Doses)


Student Insulin Plan (Insulin-to-Carb Ratio)
For Approved App, Dosing Chart, or Parent/Guardian Call for Dose


Student Insulin Plan (Insulin-to-Carb Ratio)
For Correction Scale

SECTIONS COMMON TO ALL 3 STUDENT INSULIN PLANS

1. Demographic information about the student

Student Name		DOB (MM/DD/YYYY)	
School		Class/Grade	

- For completion by the parent/guardian.

2. Roles/responsibilities of the parent/guardian and school personnel

ROLES/RESPONSIBILITIES

a) **Parent/guardian:** Complete, sign, and date this plan and provide to the school. Review monthly with school staff and fill out a new Student Insulin Plan form if there are any changes.

b) **School personnel:**

- Only teacher assistants with training can supervise or give insulin. A second person must check the dose.
- Refer to this plan when supervising or giving insulin. Refer to the student's Plan of Care: Diabetes for more detailed information, such as regarding activity, guidance for students using glucose sensors, and student preferences.
- Review this insulin plan with the parent/guardian monthly. If there are no changes, check (✓) and initial below. If there are changes, the parent/guardian must fill out a new Student Insulin Plan form.

For School Personnel to Complete at Monthly Review

Reviewed with parent/guardian and NO CHANGES	Check	Oct ☐	Nov ☐	Dec ☐	Jan ☐	Feb ☐	Mar ☐	Apr ☐	May ☐	Jun ☐
	Initial									

- The parent/guardian completes the form and provides it to the school. They complete a new form if the insulin dose changes. They will review the plan with school personnel monthly.
- School personnel will review monthly with the parent/guardian. They will check and initial if there are no changes.

3. The level of support needed, sequence, and insulin type

Level of support needed:	Sequence—check glucose first, then:
☐ supervision of student self-injection	☐ give insulin before eating *(start eating within 15 mins)*
☐ school personnel to inject insulin	☐ eat first, then give insulin *(immediately after finished eating)*

Insulin type: ☐ Admelog® ☐ Apidra® ☐ Fiasp® ☐ Humalog® ☐ NovoRapid® ☐ Truapi® ☐ other: _____

- For completion by the parent/guardian.

4. If planned activity in the afternoon

If planned activity in the afternoon (check one only):

☐ refer to Plan of Care: Diabetes for activity snack

☐ no changes for afternoon activity

- The parent/guardian can indicate if an activity snack is required. Details to be found in the Plan of Care.

5. Additional instructions

ADDITIONAL INSTRUCTIONS:

- Ensure timely documentation using specific forms approved for diabetes management in Nova Scotia schools.
- If the student does not eat all their lunch and insulin was given before eating, call their parent/guardian.
- Always refer to the student's Plan of Care: Diabetes if the student
  - has a low blood glucose (Once fast-acting carb is given to treat low, the student may eat lunch and recheck the glucose in 15 minutes to ensure it is above 4 mmol/L.
    After the student has eaten, give the lowest dose of insulin on the scale. Do not add any additional insulin.)
  - has increased thirst and frequent need for the washroom

- Found on the reverse of each plan.
- Provides guidance for treating lows occurring at lunch, with post-treatment insulin dosing instructions. See Additional Guidance section (page 10) for more information.

6. Signature line

Parent/guardian signature:	Date (MM/DD/YYYY):
Parent/guardian signature:	Date (MM/DD/YYYY):

- Two signature lines to accommodate signatures from 2 parents/guardians, where the situation dictates that requirement (e.g., custody arrangement)

3. STUDENT INSULIN PLAN (SET DOSES)

- The Student Insulin Plan (Set Doses) is for students on a set dose of insulin (for the food amount) and using a scale (for the correction amount).
- Students using this plan will be eating a consistent amount (within a range) of carbohydrate at lunch each day.
- If their before-lunch glucose is above their target range, they will need extra insulin to bring down or "correct" the glucose.

Here is an example of how the scale might look once completed by the parent/guardian (or designate):

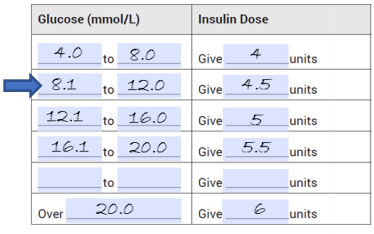
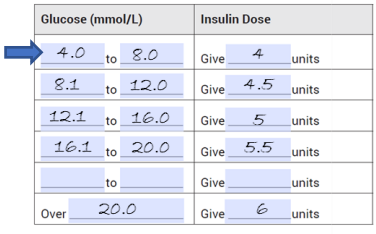
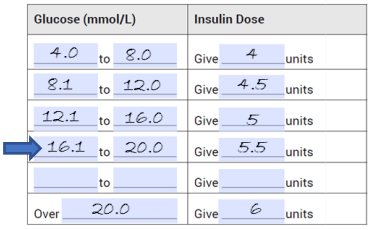
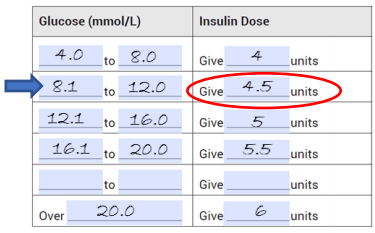
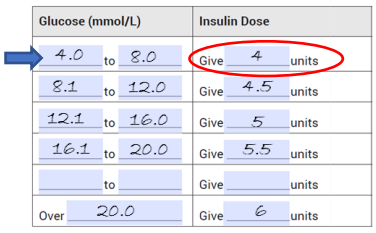
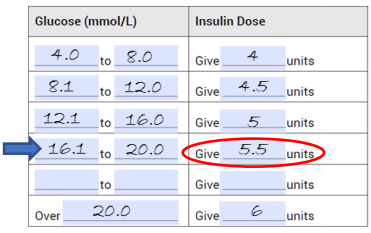
Glucose (mmol/L)	Insulin Dose
4.0 to 8.0	Give 4 units
8.1 to 12.0	Give 4.5 units
12.1 to 16.0	Give 5 units
16.1 to 20.0	Give 5.5 units
to	Give units
Over 20.0	Give 6 units

- The top row shows the student's target glucose range ("Glucose" column) and the set dose of insulin for the food amount ("Insulin Dose" column).
- No additional insulin is needed to bring down or "correct" the glucose because it is in target.

- As the glucose ranges increase ("Glucose" column), more insulin is needed ("Insulin Dose" column).
- This is the food amount plus the correction amount.

STEPS TO DETERMINE THE INSULIN DOSE

1. Check the student's glucose (finger poke or sensor) before eating
2. Find the range that includes the student's glucose ("Glucose "column)
3. Find the corresponding Insulin Dose directly to the right ("Insulin Dose" column)

	Example 1	Example 2	Example 3
Step 1	The student's before-lunch glucose is 9.2 mmol/L	The student's before-lunch glucose is 5.6 mmol/L	The student's before-lunch glucose is 17.1 mmol/L
Step 2	 This falls within the 8.1 to 12.0 range	 This falls within the 4.0 to 8.0 range	 This falls within the 16.1 to 20.0 range
Step 3	 This corresponds with 4.5 units	 This corresponds with 4 units	 This corresponds with 5.5 units

4. STUDENT INSULIN PLAN (INSULIN-TO-CARB RATIO) - FOR APPROVED APP, DOSING CHART, OR PARENT/GUARDIAN CALL FOR DOSE

- The Student Insulin Plan (Insulin-to-Carb Ratio) – For Approved App, Dosing Chart, or Parent/Guardian Call for Dose is for students on a flexible dose using an Insulin-to-Carb Ratio (for the food amount) and using an Insulin Sensitivity Factor (or Correction Factor) (for the correction amount).
- Students using this plan will be eating variable amounts of carbohydrate at lunch each day.
- If the student's before lunch glucose is above their target range, they will need extra insulin to bring down or "correct" the glucose.

The parent/guardian must choose 1 of these methods to be used by the TA to determine the daily lunch time insulin dose.

- Read more about each method in the following sections of this guide.

Method to Determine Insulin Dose (check one only)

1. ☐ **Use app (from approved list) provided by parent/guardian.**
   - School personnel must enter glucose and carbohydrate amount daily.
   - Target glucose: _____ ICR: _____ ISF: _____
     ICR = insulin-to-carb ratio ISF = insulin sensitivity factor
2. ☐ **Use attached "BolusCalcLunch" dosing chart provided by the parent/guardian.**
   - BC Children's BolusCalcLunch Excel spreadsheet: http://www.bcchildrens.ca/endocrinology-diabetes-site/documents/boluscalclunch.xlsx
3. ☐ **Call parent/guardian for dose.**
   - Check glucose and carbohydrate amount.
   - Ensure second check.

METHOD #1 – USE APP (FROM APPROVED LIST) PROVIDED BY PARENT/GUARDIAN

- There are currently 3 Apps on the Approved Apps List:

1. BC Children's BolusCalc (Insulin Bolus Calculator) App	• Android: BolusCalc - Apps on Google Play • iOSApp: BolusCalc on the App Store (apple.com)
2. Ypsomed App	• Android: Ypsomed App - Apps on Google Play • iOSApp: Ypsomed App on the App Store (apple.com)
3. OneTouch Reveal® Diabetes App	• Android: OneTouch Reveal® Diabetes App – Apps on Google Play • iOSApp: OneTouch Reveal® on the App Store (apple.com)

- The app will be provided by the parent/guardian and will be pre-set with the student's Target Glucose, Insulin-to-Carb ratio, and Insulin Sensitivity Factor.
- The TA will enter the student's glucose and carbohydrate amount daily. The insulin dose will be automatically calculated.
- See Appendix B (page 16) for instructions for each app's use.

METHOD #2 – USE ATTACHED "BOLUSCALCLUNCH" DOSING CHART PROVIDED BY THE PARENT/GUARDIAN

- Parent/guardian enters information into the spreadsheet, then provides the generated chart to the school.
- The TA will use the chart to determine the insulin dose based on the student's before lunch glucose and grams of carbs in the student's lunch.
- See sample Dosing Chart (page 6) and Steps to Determine the Insulin Dose using the Dosing Chart (page 7).

Sample Dosing Chart as provided by the family

BOLUS CALCULATOR FOR SCHOOL LUNCHES

Patient's Name: Nolan James
Today's Date: August 4, 2022

Date of Birth: October 23, 2015

for carb ratios 4–60 grams, sensitivity factors 1–20 mmol/L

ALWAYS REFER TO CARE PLAN BEFORE GIVING INSULIN!
FOR BG ≥20 MMOL/L CALL PARENT!
TREAT IF LOW BEFORE GIVING INSULIN!

Does not account for active insulin/insulin-on-board, nor for activity!

	Lunch	
Carb Ratio	25	grams
Sensitivity Factor	5	mmol/L
Target Glucose	6	mmol/L
Carb Range	0–186	grams
Rapid Insulin	NovoRapid	

LUNCH GLUCOSE	CARBS (grams) →	0–11	12–23	24–36	37–48	49–61	62–73	74–86	87–98	99–111	112–123	124–136	137–148	149–161	162–173	174–186
	0.0–7.9	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
	8.0–10.4	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
	10.5–12.9	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
	13.0–15.4	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
	15.5–17.9	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
	18.0–20.4	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
	20.5–22.9	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
	23.0–25.4	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5
	25.5–27.9	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0
	28.0–30.4	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5

April 21, 2022 www.bcchildrens.ca/endocrinology-diabetes-site/documents/boluscalclunch.xlsx BolusCalc, Page 1 of 1

Steps to determine the insulin dose using the Dosing Chart

- Check the student's glucose (finger poke or sensor) before eating
- Check how many carbs are in the student's lunch (it should be clearly marked by the parent/guardian)

1. Find the range that includes the student's glucose on the chart ("Lunch Glucose" column)
2. Find the range that includes the lunch carbs on the chart ("Carbs (grams)" row)
3. Find where the glucose range and lunch carb range intersect (meet) on the chart – that is the insulin dose

BOLUS CALCULATOR FOR SCHOOL LUNCHES

Patient's Name: Nolan James
Today's Date: August 4, 2022
Date of Birth: October 23, 2015

for carb ratios 4–60 grams, sensitivity factors 1–20 mmol/L

ALWAYS REFER TO CARE PLAN BEFORE GIVING INSULIN!
FOR BG ≥20 MMOL/L CALL PARENT!
TREAT IF LOW BEFORE GIVING INSULIN!

Does not account for active insulin/insulin-on-board, nor for activity!

Lunch		
Carb Ratio	25	grams
Sensitivity Factor	5	mmol/L
Target Glucose	6	mmol/L
Carb Range	0–186	grams
Rapid Insulin	NovoRapid	

2

LUNCH GLUCOSE	CARBS (grams) → 0–11	12–23	24–36	37–48	49–61	62–73	74–86	87–98	99–111	112–123	124–136	137–148	149–161	162–173	174–186
0.0–7.9	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0
1 → 8.0–10.4	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
10.5–12.9	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0
13.0–15.4	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5
15.5–17.9	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
18.0–20.4	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5
20.5–22.9	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
23.0–25.4	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5
25.5–27.9	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0
28.0–30.4	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	10.5	11.0	11.5

April 21, 2022 www.bcchildrens.ca/endocrinology-diabetes-site/documents/boluscalclunch.xlsx BolusCalc, Page 1 of 1

Example:

- The before lunch glucose is 8.3
- There are 55 grams of carbs in the lunch

Step 1: Find the range that includes the student's glucose on the chart ("Lunch Glucose" column)

- The student's glucose of 8.3 falls in the range of 8.0 – 10.4 on the chart

Step 2: Find the range that includes the lunch carbs on the chart ("Carbs (grams)" row)

- The lunch carbs of 55 grams falls in the range of 49-61 on the chart

Step 3: Find where the glucose range and lunch carb range intersect (meet) – that is the insulin dose

- They intersect (meet) at 2.5.
- **The insulin dose is 2.5 units**

METHOD #3 – CALL PARENT/GUARDIAN FOR DOSE

- The TA will check the student's before lunch glucose and grams of carb in the student's lunch. They will call the parent/guardian for the insulin dose.
- A second check is needed to ensure the TA heard the dose correctly.

5. STUDENT INSULIN PLAN (INSULIN-TO-CARB RATIO) - FOR CORRECTION SCALE

- This plan is for students using an Insulin-to-Carb Ratio for the food amount and a scale for the correction amount.
- The parent/guardian enters the Insulin-to-Carb ratio and completes the correction scale on the plan.

Here is an example of how the Insulin for Carbs and scale might look once completed by the family:

Step 1 Insulin for carbs:	1 unit per 25 grams of carb (ratio)	**Daily Calculation:** Lunch carbs ÷ ratio = **insulin for carbs**

Step 2 Scale for Correction Amount	
Glucose (mmol/L)	**Correction Amount**
4.0 to 8.0	No correction required
8.1 to 12.0	Add 0.5 units
12.1 to 16.0	Add 1 units
16.1 to 20.0	Add 1.5 units
to	Add units
Over 20.0	Add 2 units

- The Insulin-to-Carb Ratio is unique to each student.
- In this example, 1 unit of insulin "covers" every 25 grams of carb eaten.
- To calculate how much insulin is needed to "cover" the amount of carb the student eats, divide (÷) the grams of carb by the ratio.

  Lunch carbs ÷ ratio = insulin for carbs

- As the glucose ranges increase ("Glucose" column), more insulin is needed ("Correction Amount" column).

Steps to determine the insulin dose:

- Check the student's glucose (finger poke or sensor) before eating
- Check how many carbs are in the student's lunch (it should be clearly marked by the parent/guardian)

1. Determine Insulin for Carbs: Lunch carbs ÷ ratio = Insulin for Carbs
2. Determine Correction Amount using the Scale
   a. Find the range that includes the student's glucose ("Glucose "column)
   b. Find the corresponding correction amount directly to the right ("Correction Amount" column)
3. Determine the Total Dose by adding (+) the Insulin for Carbs and the Correction Amount together

Example (using example ratio and Correction Scale above)

- The before lunch glucose is 9.1
- There are 60 grams of carbs in the lunch

Step 1 – Insulin for Carbs (Lunch carbs ÷ ratio = Insulin for Carbs)	**Step 2 – Correction Amount** (from Correction Scale)	**Step 3 – Add Together** (Insulin for Carbs + Correction Amount)
60 ÷ 25 = 2.4 (round to 2.5) **The Insulin for Carbs is 2.5 units**	a. A glucose of 9.1 corresponds with the range of 8.1 to 12.0 on the scale b. The corresponding correction amount is 0.5 units **The Correction Amount is 0.5 units**	2.5 + 0.5 = 3 **The total insulin dose is 3 units**

6. ADDITIONAL GUIDANCE

INSULIN DOSING USING SENSOR GLUCOSE

A finger poke should be completed when the student's before lunch sensor glucose is showing the following:

a) **Libre sensors:** a straight up (↑) or straight down (↓) arrow with the reading.
b) **Dexcom & Medtronic sensors**: 2 or more arrows up (↑↑) or down (↓↓).

In the above cases, the glucose is changing quickly making the sensor glucose less accurate and a blood glucose (finger poke) should be used when determining the dose.

ROUNDING INSULIN DOSES

Round to the *nearest* half or full unit (for students with half unit pens), or to the nearest full unit only (for students with full unit pens). This means you may round down or up, depending on the value. Rounding rules would generally dictate the following:

If the value is…	Half Unit Pen
#.01 to #.24	Round **down** to full unit
#.25 to #.74	Round **up or down** to half unit
#.75 to #.99	Round **up** to full unit

If the value is…	Full Unit Pen
#.01 to #.49	Round **down** to full unit
#.50 to #.99	Round **up** to full unit

Students/families may have individualized preferences for rounding which should be specified in the student's 'Plan of Care: Diabetes.'

SCENARIO EXAMPLES:

John's app shows he needs…	Rounding to the nearest half or full unit, John would get…
• 6.4 units	• **6.5 units**
• 6.25 units	• **6.5 units**
• 6.85 units	• **7 units**

Mary's 'Insulin for Carbs' calculation shows…	Rounding to the nearest half or full unit, Mary would get…
• 2.4 units	• **2.5 units**
• 3.3 units	• **3.5 units**
• 2.2 units	• **2 units**

Omar's app shows he needs…	Omar has a full unit pen. Rounding to the nearest full unit, Omar would get…
• 6.25 units	• **6 units**
• 6.5 units	• **7 units**
• 5.75 units	• **6 units**
• 5.1 units	• **5 units**

"REVERSE LUNCH" SCENARIO (PLAYTIME BEFORE EATING)

Typically, it is recommended that the student check their glucose before playtime. If required, a snack is given as they head out to play (see 'Plan of Care: Diabetes' for their individualized plan). After playtime, the glucose should be checked again before eating lunch, and that glucose value used to dose the lunchtime insulin.

LOW BLOOD GLUCOSE OCCURING AT LUNCH

Once fast-acting carb is given to treat the low blood glucose (as outlined in the student's Plan of Care: Diabetes') the student may eat their lunch without waiting for the 15-minute recheck. Recheck the glucose in 15 minutes to ensure it is above 4 mmol/L. After the student has eaten (and the rechecked glucose is above 4 mmol/L), dose the insulin according to these guidelines:

1. **Set Doses Plan:** Give the lowest dose of insulin on the scale. Do not add any additional insulin.

2. **Insulin-to-Carb Ratio Plan (App/Dosing Chart/Call Home):** Give insulin using glucose of 4 mmol/L to determine dose. Do not include the carbohydrate given to treat the low glucose.

3. **Insulin-to-Carb Ratio Plan (Correction Scale):** Give only the insulin for carb in the lunch. Do not include the carbohydrate given to treat the low glucose. Do not add any additional insulin.

These guidelines are found on the reverse of each Student Insulin Plan, under "Additional Instructions."

APPENDIX A – STUDENT INSULIN PLANS WORKBOOK

- An opportunity to practice using the Student Insulin Plans.
- Answer the questions using the scenarios provided. Answers provided on page 15.

STUDENT INSULIN PLAN (SET DOSES)

Scenario 1 – Emma

Glucose (mmol/L)	Insulin Dose
4.0 to 8.0	Give 3 units
8.1 to 12.0	Give 3.5 units
12.1 to 16.0	Give 4 units
16.1 to 20.0	Give 4.5 units
to	Give units
Over 20.0	Give 5 units

Using Emma's scale, what is her insulin dose if her before lunch glucose is…

1.1 6.5 mmol/L

1.2 12.2 mmol/L

1.3 15.0 mmol/L

Scenario 2 – Alex

Glucose (mmol/L)	Insulin Dose
4.0 to 7.0	Give 5 units
7.1 to 10.0	Give 6 units
10.1 to 13.0	Give 7 units
13.1 to 16.0	Give 8 units
16.1 to 19.0	Give 9 units
Over 19.0	Give 10 units

Using Alex's scale, what is their insulin dose if their before lunch glucose is…

2.1 9.4 mmol/L

2.2 7.5 mmol/L

2.3 13.2 mmol/L

Scenario 3 – Ben

Glucose (mmol/L)	Insulin Dose
4.0 to 7.0	Give 4 units
7.1 to 10.0	Give 4.5 units
10.1 to 13.0	Give 5 units
13.1 to 16.0	Give 5.5 units
16.1 to 19.0	Give 6 units
Over 19.0	Give 6.5 units

Using Ben's scale, what is his insulin dose if his before lunch glucose is…

3.1 11.5 mmol/L

3.2 7.1 mmol/L

3.3 5.3 mmol/L

STUDENT INSULIN PLAN (INSULIN-TO-CARB RATIO) – FOR CORRECTION SCALE

Scenario 1 – Emma

Step 1 Insulin for carbs:	1 unit per 25 grams of carb (ratio)	**Daily Calculation:** Lunch carbs ÷ ratio = **insulin for carbs**

Step 2 Scale for Correction Amount	
Glucose (mmol/L)	**Correction Amount**
4.0 to 8.0	No correction required
8.1 to 12.0	Add 0.5 units
12.1 to 16.0	Add 1 units
16.1 to 20.0	Add 1.5 units
to	Add units
Over 20.0	Add 2 units

Step 3: Total Dose = Insulin for carbs + Correction Amount

Using Emma's ratio and scale (above), what is her insulin dose when:

		Step 1 – Insulin for Carbs (Lunch carbs ÷ ratio = Insulin for Carbs)	**Step 2 – Correction Amount** (from Correction Scale)	**Step 3 – Add Together** (Insulin for Carbs + Correction Amount)
1.1	Glucose = **6.5 mmolL** Lunch carb = **60 grams**			
1.2	Glucose = **12.2 mmol/L** Lunch carb = **70 grams**			
1.3	Glucose = **15.0 mmol/L** Lunch carb = **55 grams**			

APPENDIX A – STUDENT INSULIN PLANS WORKBOOK

Scenario 2 – Alex

Step 1 Insulin for carbs:	1 unit per 15 grams of carb (ratio)	**Daily Calculation:** Lunch carbs ÷ ratio = **insulin for carbs**

Step 2 Scale for Correction Amount	
Glucose (mmol/L)	**Correction Amount**
4.0 to 7.0	No correction required
7.1 to 10.0	Add 1 units
10.1 to 13.0	Add 2 units
13.1 to 16.0	Add 3 units
16.1 to 19.0	Add 4 units
Over 19.0	Add 5 units

Step 3: Total Dose = Insulin for carbs + Correction Amount

Using Alex's ratio and scale (above), what is their insulin dose when:

		Step 1 – Insulin for Carbs (Lunch carbs ÷ ratio = Insulin for Carbs)	**Step 2 – Correction Amount** (from Correction Scale)	**Step 3 – Add Together** (Insulin for Carbs + Correction Amount)
2.1	Glucose = **9.4 mmol/L** Lunch carb = **70 g**			
2.2	Glucose = **7.5 mmol/L** Lunch carb = **90 g**			
2.3	Glucose = **13.2 mmol/L** Lunch carb = **60 g**			

Scenario 3 - Ben

Step 1 Insulin for carbs:	1 unit per 20 grams of carb (ratio)	**Daily Calculation:** Lunch carbs ÷ ratio = **insulin for carbs**

Step 2 Scale for Correction Amount	
Glucose (mmol/L)	**Correction Amount**
4.0 to 7.0	No correction required
7.1 to 10.0	Add 0.5 units
10.1 to 13.0	Add 1 units
13.1 to 16.0	Add 1.5 units
16.1 to 19.0	Add 2 units
Over 19.0	Add 2.5 units

Step 3: Total Dose = Insulin for carbs + Correction Amount

Using Ben's ratio and scale (above), what is his insulin dose when:

		Step 1 – Insulin for Carbs (Lunch carbs ÷ ratio = Insulin for Carbs)	**Step 2 – Correction Amount** (from Correction Scale)	**Step 3 – Add Together** (Insulin for Carbs + Correction Amount)
3.1	Glucose = **11.5 mmol/L** Lunch carb = **70 g**			
3.2	Glucose = **7.1 mmol/L** Lunch carb = **80 g**			
3.3	Glucose = **5.3 mmol/L** Lunch carb = **55 g**			

ANSWERS

STUDENT INSULIN PLAN (SET DOSES)

Scenario 1 - Emma	Scenario 2 - Alex	Scenario 3 - Ben
1.1 (glucose is 6.5) = 3 units	2.1 (glucose is 9.4) = 6 units	3.1 (glucose is 11.5) = 5 units
1.2 (glucose is 12.2) = 4 units	2.2 (glucose is 7.5) = 6 units	3.2 (glucose is 7.1) = 4.5 units
1.3 (glucose is 15.0) = 4 units	2.3 (glucose is 13.2) = 8 units	3.3 (glucose is 5.3) = 4 units

STUDENT INSULIN PLAN (INSULIN-TO-CARB RATIO) – FOR CORRECTION SCALE

Scenario 1 - Emma

		Step 1 – Insulin for Carbs	Step 2 – Correction Amount	Step 3 – Add Together
1.1	Glucose = **6.5** Lunch carb = **60 g**	60 ÷ 25 = 2.4 (round to 2.5)	No correction required	2.5 + 0 = 2.5 **Total dose = 2.5 units**
1.2	Glucose = **12.2** Lunch carb = **70 g**	70 ÷ 25 = 2.8 (round to 3)	Add 1 unit	3 + 1 = 4 **Total dose = 4 units**
1.3	Glucose = **15.0** Lunch carb = **55 g**	55 ÷ 25 = 2.2 (round to 2)	Add 1 unit	2 + 1 = 3 **Total dose = 3 units**

Scenario 2 - Alex

		Step 1 – Insulin for Carbs	Step 2 – Correction Amount	Step 3 – Add Together
2.1	Glucose = **9.4** Lunch carb = **70 g**	70 ÷ 15 = 4.6 (round to 4.5)	Add 1 unit	4.5 + 1 = 5.5 **Total dose = 5.5 units**
2.2	Glucose = **7.5** Lunch carb = **90 g**	90 ÷ 15 = 6	Add 1 unit	6 + 1 = 7 **Total dose = 7 units**
2.3	Glucose = **13.2** Lunch carb = **60 g**	60 ÷ 15 = 4	Add 3 units	4 + 3 = 7 **Total dose = 7 units**

Scenario 3 - Ben

		Step 1 – Insulin for Carbs	Step 2 – Correction Amount	Step 3 – Add Together
3.1	Glucose = **11.5** Lunch carb = **70 g**	70 ÷ 20 = 3.5	Add 1 unit	3.5 + 1 = 4.5 **Total Dose = 4.5 units**
3.2	Glucose = **7.1** Lunch carb = **80 g**	80 ÷ 20 = 4	Add 0.5 units	4 + 0.5 = 4.5 **Total Dose = 4.5 units**
3.3	Glucose = **5.3** Lunch carb = **55 g**	55 ÷ 20 = 2.8 (round to 3)	No correction required	3 + 0 = 3 **Total Dose = 3 units**

APPENDIX B – APPROVED APPS USER GUIDE

1. BC CHILDREN'S BOLUSCALC (INSULIN BOLUS CALCULATOR) APP

- Android: BolusCalc - Apps on Google Play
- iOSApp: BolusCalc on the App Store (apple.com)

Steps to determine the insulin dose:

1. **Choose 'Simple Insulin Bolus' from the Home Screen menu (see Image #1, below)**
   - This will open the Simple Insulin Bolus calculator screen (see Image #2, below).
   - It will show the student's Name, Carb Ratio, Sensitivity Factor, and Target BG (glucose) as entered by the parent/guardian (see Image #2, below).

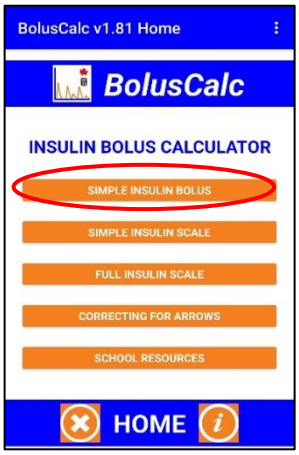


Image #1

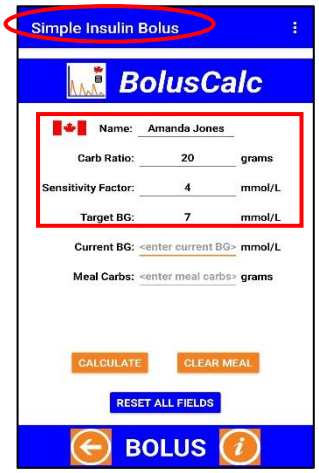


Image #2

2. **Enter the student's Current BG** (before lunch glucose, obtained through finger poke or sensor), and **Meal Carbs** (see Image #3, below).
3. **Click 'Calculate'** (see Image #3, below).
   - The Insulin Dose is automatically calculated (see Image #4, below).

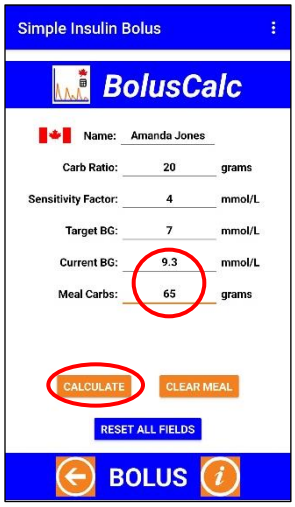


Image #3

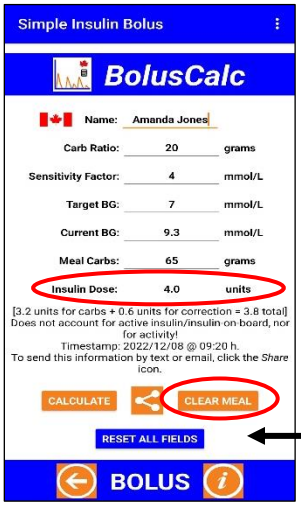


Image #4

4. **Click 'Clear Meal'** when ready to reset the **Current BG** and **Meal Carbs** back to blank fields (see Image #4, left).
   - The Name, Carb Ratio, Sensitivity Factor and Target BG will remain as entered by the parent/guardian.

Note: DO NOT click 'Reset All Fields' as this will reset every field to a blank field, including those entered by the parent/guardian.

2. YPSOMED APP

- Android: Ypsomed App - Apps on Google Play
- iOSApp: Ypsomed App on the App Store (apple.com)

Video Tutorial: How the Ypsomed App can help you manage your multiple daily injections (MDI) - YouTube

1. Bolus Calculator review (7:40-10:42)

Steps to determine the insulin dose:

1. **Open the 'Bolus Calculator'** using the quick link icon (, top right) or by opening the menu (, top left) and selecting 'Bolus calculator' (see Image #1 and #2, below).
   - A pop-up will appear asking you to confirm the last bolus that is in the logbook. **Click "Yes"** (see Image #3, below).

Image #1

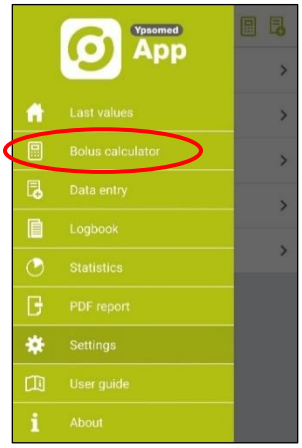


Image #2

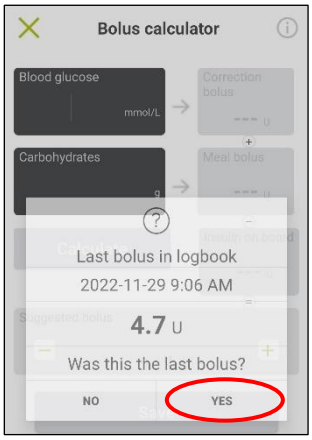


Image #3

2. **Enter the 'Blood glucose'** (before lunch glucose, obtained through finger poke or sensor) and the **'Carbohydrates'** (in the lunch) (see Image #4 and #5, below)
3. **Click 'Calculate'** (see Image #5, below)
   - The Insulin Dose is automatically calculated (see Image #6, below)
4. **Click 'Save'** (see Image #6, below)
   - A pop-up will appear asking if you are going to apply this bolus now. **Click "Yes."** (see Image #7, below)

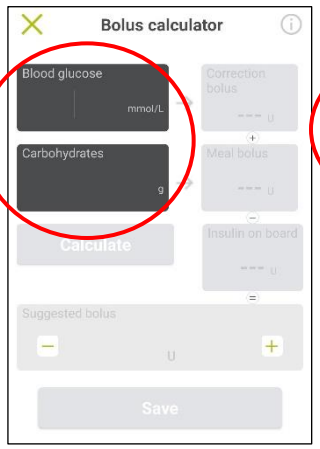


Image #4

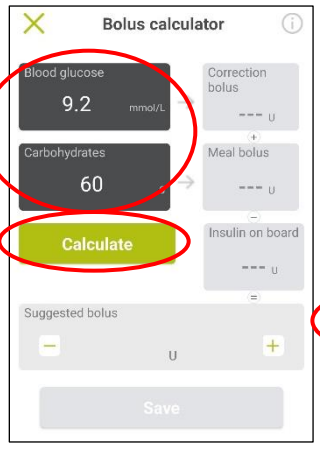


Image #5

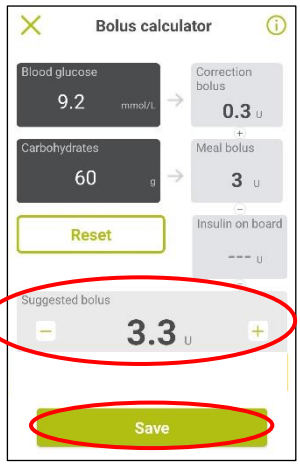


Image #6

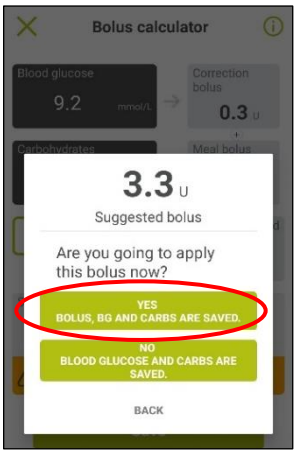


Image #7

3. ONETOUCH REVEAL® DIABETES APP

- Android: OneTouch Reveal® Diabetes App – Apps on Google Play
- iOSApp: OneTouch Reveal® on the App Store (apple.com)

The Insulin Mentor™ feature must be enabled by a healthcare professional

- Healthcare Professionals Guide: insulin_mentor_hcp_web_user_guide.pdf (onetouch.ca)

Steps to determine the insulin dose:

1. **Choose 'Insulin Mentor'** from the 'Choose an Event' screen
2. **Enter the student's Glucose** (before lunch, obtained through finger poke or sensor)
   - If the student uses a blood glucose meter that has been paired and synched with the app, it will appear automatically
3. Tap the plus (+) icon to **add a new Carbs event**
   - Enter the grams of carb in the lunch

- The Recommended Insulin Dose is automatically calculated.

The instructions for this app will be expanded as more information becomes available