Simple To Advanced Approaches To Carbohydrate Counting
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Learner Objectives

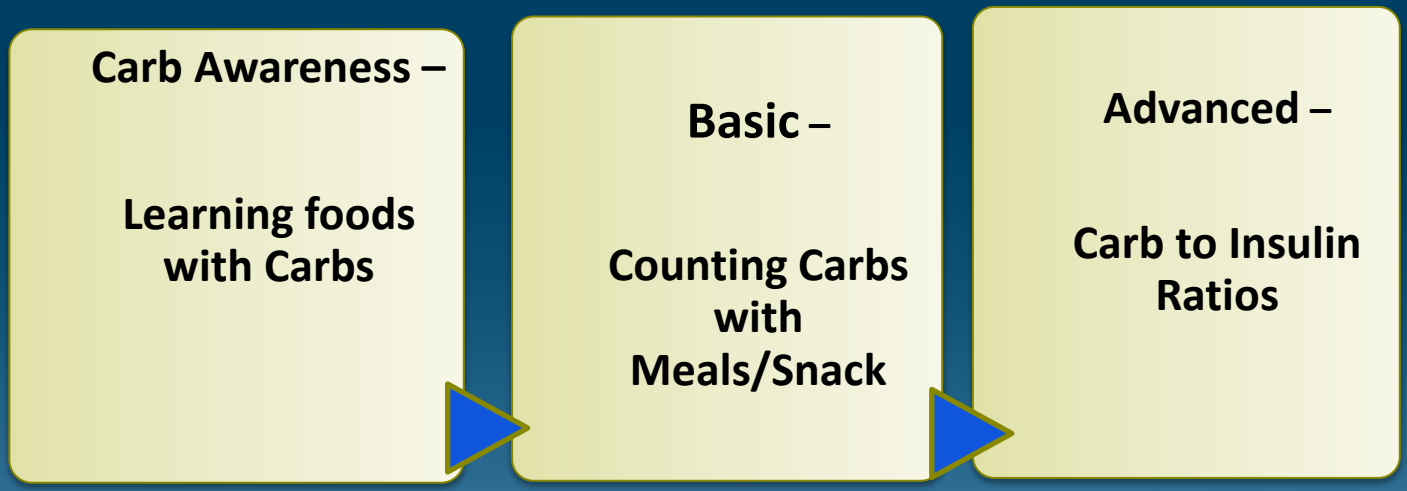
1. Examine visual cues to identify, count and balance carbohydrates in meals as a vital tool for diabetes management.
2. Educate clients to identify carbohydrates and carb content of foods.
3. Describe how to calculate insulin dosage based on the amount of carbohydrate that is consumed at a meal.

Health Education – Tailored Approaches

According to the ADCES, education content should be adapted to meet individuals' needs, accounting for:

- Age
- Developmental stage
- Type of diabetes
- Cultural factors
- Health literacy and numeracy
- Access to healthful food
- Comorbidities

Carb Counting Continuum



End Goal – Glycemic Control

The Case for Carbohydrate Counting

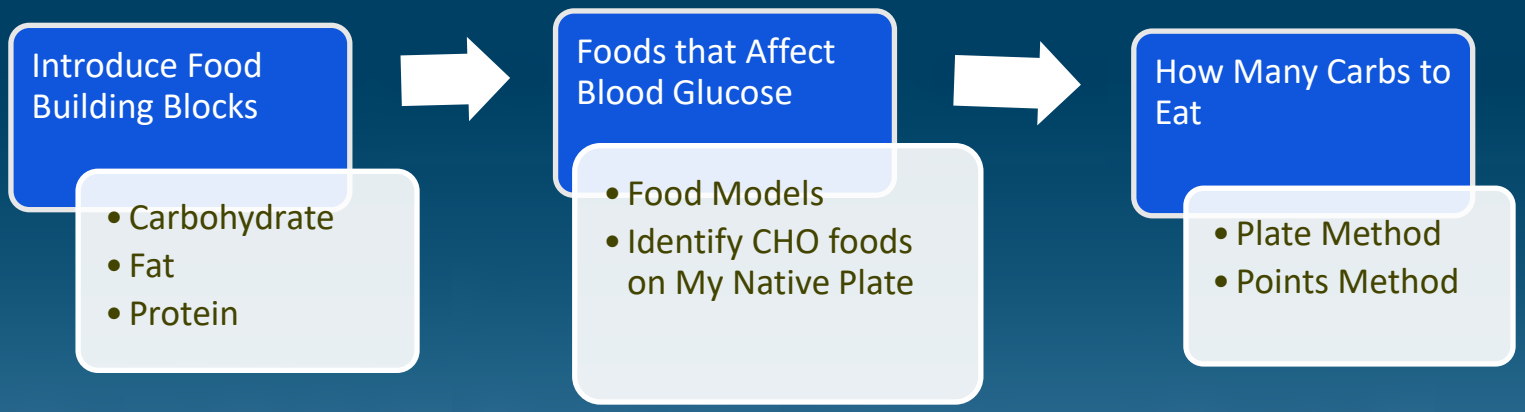
- Has been used since insulin discovered.
- Gained in popularity since the Diabetes Control & Complication Trial (DCCT) 1993
  - Priority to achieve and maintain glycemic control ↓ Morbidity/Mortality
- Improved post prandial (pp) glucose control.
  - The quantity and type of carb intake are major determinants of pp glucose
- Allows people to match their dose of insulin to a set amount of carbohydrate to consume.

Consensus Report on Nutrition

"Strong evidence supports the efficacy and cost effectiveness of nutrition therapy as a component of diabetes care, including it's integration into the medical management of diabetes".

https://doi.org/10.2337/dci19-0014
Nutrition Therapy for Adults with Diabetes, Pre- diabetes, Diabetes Care 4-2019

Class Education Process



Assessing Knowledge of Carbs

Questions to ask:

- What are the foods/food groups that contain carbs?
- What are the foods/food groups that contain **no** or few carbs?
- What are some foods with carbs that you eat?
- What are some foods with carbs that were eaten long ago?

Assemble – Food Visuals

Foods with carbs:

Organize images into groups:

- Grains: whole grains and highly processed grains
- Starchy vegetables: corn, beans, potatoes, hard shelled squash
- Fruit
- Dairy foods: milk, yogurt

Have visuals of sample plates

NASCO Food Models: www.enasco.com/nutriton

CDC Diabetes Plate

Basic Ideas About Carbs

- Carbs are **sugars, starches, and fibers** in foods
- Carbs give your body energy and raise glucose
- Carbs + Insulin (in your body) correlate to blood sugar levels
- Include some carbs with meals and snacks
- Have consistent times for meals and snacks

Traditional Growing System - Milpa

Corn, Beans, and Squash
"*The Three Sisters*"

Crops domesticated by ancestors of American Indians and the backbone of agrarian tribes food systems.

- Corn – rich in carbs
- Beans – protein, carbs
- Squash – carbs, seed oils and antioxidant vitamins

Mann, Charles (2005). 1491: New Revelations of the Americas Before Columbus. New York: Vintage Books. pp 197-198

Beans and Starchy Veggies

Beans - 1 ½ cups/week

Starchy Vegetables - 5 cups/week

Glycemic Index (glucose = 100)	
Corn tortilla	46 ± 4
Sweet corn	52 ± 5
Pinto beans, boiled	30
Ontario potato, white, baked	60
Wild rice	55

Glycemic Index looks at the glycemic response to a fixed amount of carbohydrate in a food (50 grams). This response is compared against the response of a reference food, glucose or white bread.

Introduce Grains – Major Source of Carbs

Make most of your grains – whole grain

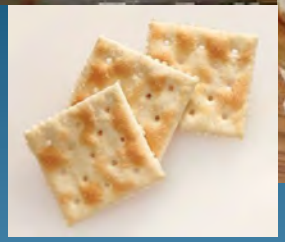
- Rolled oats or corn mush
- 100% whole wheat bread & pasta
- Brown or wild rice
- Corn tortilla

Glycemic Index (glucose = 100)	
White wheat bread*	75 ± 2
Whole wheat/whole meal bread	74 ± 2
White rice, boiled*	73 ± 4
Brown rice, boiled	68 ± 4

https://www.diabetesnet.com/food-diabetes/glycemic-index/

Examine Visual Qualities: Color & Texture

Group 1



Group 2

ask

What are the colors and textures you see in these groups of carbs?

Heritage Carbs – Starchy Vegetables

ask

How does this group of carbs look different from the last group?

Practice Practice

Finding the Carbs

ask

Using the color pattern (white, brown, or colorful) to find the carbs. Hint: grains & starchy vegetables.

Link to My Native Plate Printable PDF

Did you know the sweetness in fruit is from natural sugar?

- Natural sugar is a carb
  Nutrients in fruit:
  Vitamins C, A, potassium, fiber, and antioxidants
- Whole fruits are best: fresh, frozen or canned
- Try for 1 cup of whole fruit daily

Carbs In Dairy Foods – Lactose

- Milk (fluid, dry, evaporated)
- Milk Alternatives – Soy milk
- Yogurt
- Dairy Desserts

Nutrients

Calcium, protein, vitamins A & D, potassium, and phosphorus

Suggested intake – At least 2 servings

Identify Foods - With No Carbs

- Meats, seafood, poultry
- Eggs
- Cheese,
- Fats: margarine, butter, real mayonnaise, oils
- Nuts

Cover

Low in Carbs – 5 grams

Non-starchy vegetables, like;
Leafy greens, lettuce, tomato, onion, peppers, carrots, celery, beets, and radish

Link to My Native Plate, full color PDF

Hidden Carbs

Common Overlooked Carbs

- Bread/rolls from the bread basket
- Breading - chicken patty or fish fillet
- Pasta sauce
- Barbeque sauce, ketchup
- Croutons in salad
- Larger than usual sandwich roll
- Icing on cake or cupcake
- Pie crust

Know How Many Carbs to Eat?

Males:

- Meals: 3 – 4 CHO points per meal (45-60 grams carb/meal)
- Snacks: 1 – 2 CHO points per snack (15-30 grams carb/snack)

Females:

- Meals: 2 – 3 points per meal (30-45 grams carb/meal)
- Snacks: 1 – 2 points per snack (15-30 grams carb/snack)

Meal Timing:

Recommended 3 meals/day, every 4-6 hours

Snacks: 2 - 3 snacks per day in between meals

How Many Carbs - Fact Sheet

For an extensive list of carb foods see: [The Diabetic Exchange List](#) www.diabetesed.net

How Many Carbohydrates Should I Eat to Help My Blood Sugar?

Women: 2-3 points at each meal
Men: 3-4 points at each meal
Snacks: 1-2 points per snack

0 Points:

- Vegetables (lettuce, spinach, kale, carrots, cucumbers, cabbage, tomatoes, green beans, broccoli, cauliflower, onions, peppers)
- (***Healthier***) Lower-fat meat: Chicken, turkey, fish, eggs, low-fat cheese, peanut butter
- Higher-fat meats: beef, steak, pork
- Water
- Diet Soda or Diet Juice
- Crystal Light, Sugar Free Kool-Aid, Powerade Zero, Vitamin Water Zero
- Artificial sweeteners (Splenda, Sweet-and-Low, Equal, Stevia)
- Condiments (Ketchup, mustard, salsa)
- Oils
- Spices (Garlic, onion, pepper, Italian seasoning, cinnamon, etc.)
- Black Coffee
- Unsweetened Tea

1 Point:

- Fruit (1 small/ medium apple, 1 medium orange, 1 small banana or half large banana, half a grapefruit OR handful of strawberries)
- Spoon of sugar or honey
- 1 cupped hand blue corn mush
- 1 6-inch ear of corn OR 1 handful of corn
- 1 handful green peas
- 1 fist-size portion of squash
- 1 handful beans (black, pinto, kidney)
- 1 fist-sized potato or sweet potato
- 1 handful of mashed potatoes
- 1 small juice (Orange, pomegranate, apple, cranberry)
- 1 piece bread (whole grain, white, wheat)
- 1 6-inch tortilla
- 1 taco (just shell)
- 6 Saltine crackers
- 10-15 chips
- 3 2-cupped hands of popcorn
- 15 pretzels
- 1 cup (8oz) of cow's milk

2 Points:

- 1 bowl (2 cupped hand) cereal, cream of wheat or oatmeal
- 1 large banana
- 1 bean burrito (5 inches)
- 5-inch frybread
- 2 2-cupped hands of mutton stew w/ potatoes
- 5-inch kneel down bread
- 1 fist-sized portion of pasta
- 1 fist-sized portion of rice (brown, white)
- Half a bagel
- 1 hot dog bun
- 1 hamburger bun
- 1 cup fruit-flavored yogurt
- 2 cupped hands of melon
- 2 cupped hands of ice cream
- 3 mini donuts
- 2 "Fun-Sized" Candy Bars
- 1 slice thin-crust pizza
- Can of regular soda (Coke, 7-Up, Sprite)
- 1 Powerade or Gatorade (20 oz)

Meals: Eat 3 meals - 4-6 hours between meals
Snacks: 2-3 small snacks per day between meals
*It is okay to have a 1-2 point snack before and/or after exercising—check blood sugar to be sure!

Contact Jenna Cope, MPH, RD, LD, CHES (JCope@hrsa.gov) for additional information or questions.

Instructions: Find how many points are in each meal.

Example 1:

Sue is getting ready for the day. She chooses these foods for breakfast:

Points:

_____ 1 bowl oatmeal

_____ 1 medium orange

_____ Black Coffee

Add up all the points. **Total Points:**_____

Example 2:

John has been working in the field all day. For dinner he ate:

Points:

_____1 5-inch frybread

_____Handful of black beans

_____1 small banana

_____6 carrots

_____1 can of diet soda

Add up all the points. **Total Points:**_____

Created by: Jenna Coon, MPH, RD, LD, CHES®

Worksheet to Apply Learning

Hand guide for portion control

Using the Nutrition Facts Label to find Total Carbs and translating grams to points

Incorporation of 50/50 My Plate Method

Material created by: LCDR Jenna Cope MPH, RD, LN, CHES while serving IHS at Shiprock AZ.

How to use the Nutrition Facts Label?

- Info is based on one serving
- Look at Total Carbohydrate
  – Includes all carb components
- Pay attention to Added Sugars
- Every 15 grams Carb = 1 point

Nutrition Facts

8 servings per container

Serving size **8 fl oz (240mL)**

Amount per serving

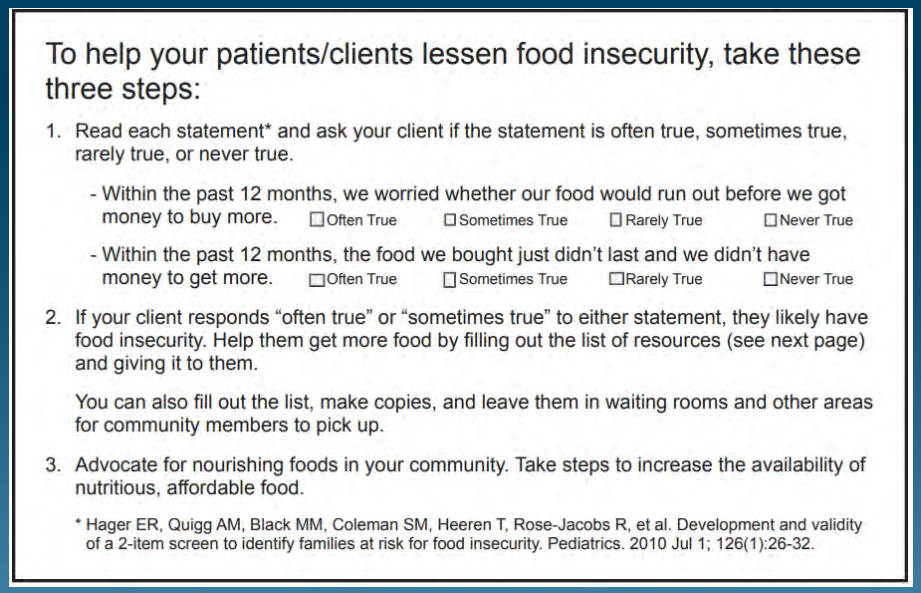
Calories **110**

	% Daily Value*
Total Fat 0g	**0%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 5mg	**0%**
Total Carbohydrate 27g	**10%**
Dietary Fiber 0g	**0%**
Total Sugars 25g	
Includes 23g Added Sugars	**46%**
Protein 0g	
Vitamin D 0mcg	0%
Calcium 0mg	0%
Iron 0mg	0%
Potassium 40mg	0%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

Screen for Food Insecurity

Screen



To help your patients/clients lessen food insecurity, take these three steps:

1. Read each statement* and ask your client if the statement is often true, sometimes true, rarely true, or never true.

   - Within the past 12 months, we worried whether our food would run out before we got money to buy more. ☐Often True ☐Sometimes True ☐Rarely True ☐Never True

   - Within the past 12 months, the food we bought just didn't last and we didn't have money to get more. ☐Often True ☐Sometimes True ☐Rarely True ☐Never True

2. If your client responds "often true" or "sometimes true" to either statement, they likely have food insecurity. Help them get more food by filling out the list of resources (see next page) and giving it to them.

   You can also fill out the list, make copies, and leave them in waiting rooms and other areas for community members to pick up.

3. Advocate for nourishing foods in your community. Take steps to increase the availability of nutritious, affordable food.

* Hager ER, Quigg AM, Black MM, Coleman SM, Heeren T, Rose-Jacobs R, et al. Development and validity of a 2-item screen to identify families at risk for food insecurity. Pediatrics. 2010 Jul 1; 126(1):26-32.

Intervene

SNAP
WIC
FDPIR (Commodities)
School Lunch and Breakfast
Senior Center
Meals on Wheels
Tribal Food Program
Community Gardens Food Bank / Food Pantry

Food Insecurity Assessment Tool and Resource List (ihs.gov)

Carbohydrates by Color

Carbohydrates are your body's main source of energy

Carbohydrates (carbs) come from sugars, starches, and dietary fiber. They are part of a healthy diet. For most people, carbs are the body's leading energy source and affect blood sugar.

How many and what carbs you eat affects how high and quickly your blood sugar rises.

To keep it simple, you can use colors—colorful, brown, and white—to identify carbs. Some carbs are healthier than others. Carbs with deeper or brighter colors are usually more nutritious than paler, more processed carbs, such as foods made with white flour and sugar.

Colorful Carbs

Starchy Vegetables

Starchy vegetables add color and texture to meals. They are healthy substitutes for highly processed grains, such as white flour and white rice. Native people traditionally ate a wide variety of corn, beans, squash, and root vegetables.

These vegetables are naturally high in fiber and nutrients. They raise blood sugar more slowly than the more processed carbohydrates.

Try to eat at least 5 cups of starchy vegetables every week.

Fruit

Fruit is a colorful carbohydrate which is low in fat and calories. The sweetness you taste when eating fruit is from the natural sugar in it. Although fruit has carbohydrates, it is low in fat and calories.

Fruits may be fresh, frozen, canned, or dried. Fruit is a good source of nutrients: potassium, folate, vitamin C, and fiber.

Try to eat 2 to 3 servings of fruit each day—such as a cup of berries and a small apple, or 2 tablespoons of raisins.

Brown Carbs

Whole Grains

Whole grains are usually brown. They come in many shapes and textures and are a major energy source. Whole grains include whole wheat flour, brown and wild rice, rolled oats, and corn meal. Some breads and pastas are made with whole grain.

Whole grain foods are full of fiber and raise sugar more slowly than processed grains. They are less likely to cause spikes in blood sugar.

Make half your grain choices whole grains.

White Carbs

Processed Grains and Sugars

Processed grains and sugar are usually white. Foods made from these tend to raise blood sugar quickly and could contribute to it going too high.

Food made with white flour includes crackers, white bread, flour tortillas, fry bread, and instant noodles.

Choose white carbs less often.

Dairy Foods

Dairy foods are rich in essential nutrients: calcium, phosphorus, vitamin D, and protein. Many dairy foods have carbs along with protein and fat. They can be part of a healthy diet.

Aim for 3 servings of dairy foods each day

Low Carbs or No Carbs

Foods with low or no carbs have very limited or no effect on blood sugar levels. Some foods with few or no carbs include:

- Meats, fish, eggs, and cheese
- Non-starchy vegetables, such as tomatoes, onions, green beans, carrots, cabbage, celery, lettuce, and peppers

Put into practice what you've learned:
See Find the Carbohydrates on My Native Plate.

Find the Carbohydrates on My Native Plate

For use with Carbohydrates by Color Fact Sheet

Knowing which foods have carbohydrates (carbs) is one of the first steps to choosing healthy foods. Use the four plates shown to practice finding carbs. *(See answers below.)*

1. Find the grains and starches using the color shades of white, brown, and colored foods on the plates.
2. Find the other brightly colored carbs. (Hint, they are naturally sweet.)
3. Find the foods that have low carbs or no carbs.

Helpful Tips

- Try choosing healthier carbs for meals and snacks. Balance the carbs you eat throughout the day.
- Eating the right kinds and amounts of carbs can help with blood sugar control.
- Visit a dietitian or diabetes care specialist. They can help you learn how many carbs are right for you.

Answers to finding the carbs on My Native Plate

1.) Answer: rice, tortilla, hamburger bun, cornbread 2.) Answer: berries, apple slices, canned peaches
3.) Answer: meat, egg, non-starchy vegetables: salad, carrots, celery, tomato, zucchini, and greens

https://www.ihs.gov/diabetes/education-materials-and-resources/diabetes-topics/nutrition/find-the-carbs/

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- Franz MJ, MacLeod J, Evert A, et al. Academy of Nutrition and Dietetics practice guideline for type 1 and 2 diabetes in adults: systemic review of evidence for medical nutrition therapy effect-iveness. J Acad Nutr Diet 2017; 117:1659-1679
- Nutrition Therapy for Adults with Diabetes and Prediabetes. Diabetes Care, 4-2019 https://doi.org/10.2337/dci19-0014
- Practical Carbohydrate Counting – A How to Teach Guide for Health Professionals by Hope Warshaw, Karen Bolderman. American Diabetes Association, 2nd edition.
- Clinical Practice Recommendations: Nutrition

Advanced Carbohydrate Counting:

Insulin-to-Carb Ratios

(ICR)

Question 1:

Only people with Type 1 Diabetes use Insulin-to-Carb Ratios

Question 1:

Only people with Type 1 Diabetes use Insulin-to-Carb Ratios

FALSE

Question 2:

Insulin-to-Carb Ratios are only used with insulin pumps

Question 2:

Insulin-to-Carb Ratios are only used with insulin pumps

FALSE

Question 3:

Insulin-to-Carb Ratios allow the most flexibility with eating while still providing accurate insulin dosing

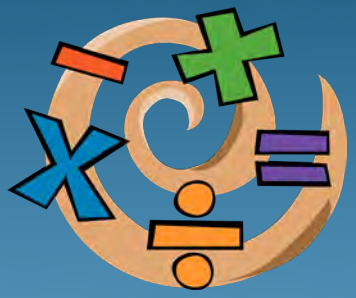
Question 3:

Insulin-to-Carb Ratios allow the most flexibility with eating while still providing accurate insulin dosing

TRUE

Is Your Patient a Good Candidate to Use Insulin-to-Carb Ratios?

- Do they use meal time insulin?
- Do they eat a different amount of carbohydrates at each meal/snack?
- Are they able to read food labels?
- Are they comfortable carbohydrate counting?
- Are they able to do basic math?



Honey Chipotle Peanut Butter

Nutrition Facts

Serving Size: 1 tbsp (14g)
Servings Per Container: 32

Amount Per Serving	
Calories 80	Calories from Fat 50
	% Daily Value*
Total Fat 5g	**8%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 5g	**2%**
Dietary Fiber 2g	**8%**
Sugars less than 1g	
Protein 3g	

Vitamin A 0% • Vitamin C 0%
Calcium 0% • Iron 6%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbonydrate		300g	375g
Dietary Fiber		25g	30g

The Provider's Role is to Calculate the Dosages…

Process Steps to Prescribe an Insulin-to-Carb Ratio

1. Determine Total Daily Dose (TDD) of Insulin

2. Calculate Insulin-to-Carb Ratio (ICR)

3. Calculate Insulin Sensitivity Factor (ISF)
   aka: Mealtime Correction Factor (CF)

1. Calculating Total Daily Dose

a) Unit per kg body weight
   - Underweight/Hemodialysis = .3 units/kg body weight
   - Normal Body Weight = .4 units/kg body weight
   - Overweight = .5 units/kg body weight
   - Obese= .6 -1 units/kg body weight

b) Insulin Drip
   - Add up units/hour for a 24 hour period

2. Calculate Insulin-to-Carb Ratio (ICR)

a) Rule of 500
- Divide 500 by the Total Daily Dose (TDD)
- ICR=500/TDD

b) Example:
- TDD= 70
- ICR= 500/70= 7.14
  - *ROUND to 7 g carb*
  - *So, 1 unit for every 7 g carb consumed*
  - *ICR=1:7*

3. Calculate Insulin Sensitivity Factor/ Mealtime Correction Factor

(1 unit of insulin will lower blood sugar by X amount)

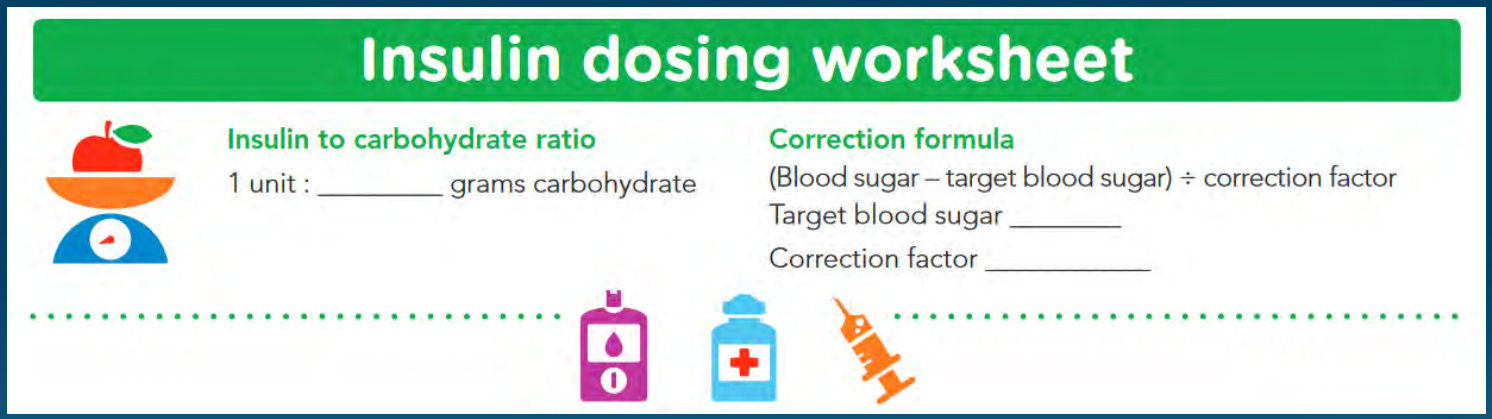
a) Calculate Correction Factor = Divide 1800 by Total Daily Dose

CF= 1800/TDD

b) Example:

CF= 1800/70=25 (1 unit of insulin will lower blood sugar by 25 mg/dl)

Give your Patient 3 things…



1. Insulin-to-Carb Ratio
2. Correction Factor
3. Target Blood Sugar Level

Now It's the Patient's Turn to Work…

Process Steps to Use an Insulin-to-Carb Ratio

1. Calculate the insulin dose to **cover the food they plan to eat** at a meal
2. Calculate how much extra insulin will need for the **meal time correction** if the patient is going into a meal above target glucose range

1. To calculate insulin dose to cover food:

a) Determine the number of grams of carbohydrate that they plan on eating at a meal/snack

b) Divide the number of grams by the insulin-to-carb ratio prescribed by the provider

c) Example:

- Prescribed ICR=1:7
- Bolus Dose= 30/7= 4.2
- *ROUND TO 4 UNITS*

Nutrition Facts

Serving Size 3 oz. (85g)
Serving Per Container 2

Amount Per Serving

Calories 200	Calories from Fat 120
	% Daily Value*
Total Fat 15g	**20 %**
Saturated Fat 5g	**28 %**
Trans Fat 3g	
Cholesterol 30mg	**10 %**
Sodium 650mg	**28 %**
Total Carbohydrate 30g	**10 %**
Dietary Fiber 0g	**0 %**
Sugars 5g	
Protein 5g	

Vitamin A 5%	Vitamin C 2%
Calcium 15%	Iron 5%

*Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.

	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300mg	375mg
Dietary Fiber		25g	30g

2. To calculate the meal time correction for going into a meal above target glucose range:

a) Check blood sugar
b) Subtract current blood sugar from target blood sugar level
c) Divide the difference by the correction factor prescribed by your provider

Calculate Correction Bolus:

$$\frac{\text{(Current Blood Sugar-Target Blood Sugar)}}{\text{Correction Factor}}$$

2. To calculate the meal time correction for going into a meal above target glucose range:

BOLUS CORRECTION: $\frac{\text{(Current Blood Sugar-Target Blood Sugar)}}{\text{Correction Factor}}$

Example:

- Current Blood Sugar is 284 mg/dl
- Target Blood Sugar is 150 mg/dl
- Prescribed Correction Factor is 1:25

CF= 1800/70=25 (1 unit of insulin will lower blood sugar by 25 mg/dl)

Correction Bolus= (284-150)/25=5.36

(ROUND TO 5 UNITS FOR CORRECTION BOLUS)

Calculate insulin dose for food

- Add up all the carbohydrates in your meal.
- Divide the total carbohydrates by the insulin to carbohydrate ratio.
- The result is the amount of insulin units needed.

Total carbs _____

÷ insulin to carb ratio _____

= units of insulin needed ☐

+

Calculate insulin dose to correct a high blood sugar

- If pre-meal blood sugar is high, take the blood sugar reading and subtract target blood sugar.
- Divide what remains by the correction factor.
- The result is the amount of insulin needed to correct high blood sugar.

(blood sugar – target) _____

÷ correction factor _____

= units of insulin needed ☐

=

Calculate total insulin dose

- Add the number of units needed for food to the number of units needed to correct blood sugar to get your total dose of insulin (Humalog/Novolog/Apidra).

Food insulin _____

+ correction insulin _____

= total insulin ☐

Example Case Study #1…

Abby came in to the hospital with DKA. She was on an insulin drip for 24 hours and her total dose on the insulin for 24 hours was 45 units. She has transitioned to basal-bolus insulin and the doctor is wanting to use an insulin to carb ratio when she starts eating.

What is her ICR?

Hint: Rule of 500

Example Case Study #1…

Abby came in to the hospital with DKA. She was on an insulin drip for 24 hours and her total dose on the insulin for 24 hours was 45 units. She has transitioned to basal-bolus insulin and the doctor is wanting to use an insulin to carb ratio when she starts eating.

What is her ICR?

Hint: Rule of 500

Answer:
ICR= 500/45=11.1
ROUND TO 11

Abby will receive 1 unit of insulin for every 11 g of carb she eats

Example Case Study #1…

Abby came in to the hospital with DKA. She was on an insulin drip for 24 hours and her total dose on the insulin for 24 hours was 45 units. She has transitioned to basal-bolus insulin and the doctor is wanting to use an insulin to carb ratio when she starts eating.

What is her CF?

Hint: Rule of 1800

Answer:
CF 1800/45=40

1 unit of insulin will lower Abby's blood sugar by about 40 mg/dl

Example Case Study #1…

Abby will receive 1 unit of insulin for every 11 g of carb she eats

The nurse comes in to give Abby her meal tray. The nurse checked Abby's blood sugar and it is 244 mg/dl. The doctor really wants it to be around 150 mg/dl. Abby ordered her first meal and it has 64 g carb. How much insulin should her nurse give her?

Remember…
Abby's ICR is 11 and CF is 40

How much insulin should Abby receive?

Example Case Study #1…

Abby will receive 1 unit of insulin for every 11 g of carb she eats

The nurse comes in to give Abby her meal tray. The nurse checked Abby's blood sugar and it is 244 mg/dl. The doctor really wants it to be around 150 mg/dl. Abby ordered her first meal and it is 64 g carb. How much insulin should her nurse give her?

Remember…
Abby's ICR is 11 and CF is 40

How much insulin should Abby receive?

ICR Bolus: 64/11= 5.8
CF Bolus: (244-150)/40=2.35
Adding those together we get 8.15 and will round to 8

Abby will get 8 units of short-acting insulin to cover her meal and correct her high blood sugar

Example Case Study #2…

Jared came in to the clinic and has Type 2 Diabetes that is not controlled really well. He has been on insulin but finds it frustrating that he is supposed to eat a certain amount of carbs at each meal. The doctor is wanting to transition him to an insulin-to-carb ratio at mealtimes.

Ht: 6’1
Wt: 102 kg
BMI: 29.6

What is his TDD?

Hint: For Overweight patients we use .5/kg body weight

Example Case Study #2…

Jared came in to the clinic and has Type 2 Diabetes that is not controlled really well. He has been on insulin but finds it frustrating that he is supposed to eat a certain amount of carbs at each meal. The doctor is wanting to transition him to an insulin-to-carb ratio at mealtimes.

Ht: 6’1
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BMI: 29.6

What is his TDD?

Hint: For Overweight patients we use .5/kg body weight

Answer: .5*102= 51 units per day

Example Case Study #2…

Jared came in to the clinic and has Type 2 Diabetes that is not controlled really well. He has been on insulin but finds it frustrating that he is supposed to eat a certain amount of carbs at each meal. The doctor is wanting to transition him to an insulin-to-carb ratio at mealtimes.

Ht: 6'1
Wt: 102 kg
BMI: 29.6
TDD=51

What is his ICR?

Hint: Rule of 500

Answer: 500/51= 9.8 *(ROUND TO 10)*

Jared will get 1 unit of insulin for every 10 g carb he eats

Example Case Study #2…

Jared came in to the clinic and has Type 2 Diabetes that is not controlled really well. He has been on insulin but finds it frustrating that he is supposed to eat a certain amount of carbs at each meal. The doctor is wanting to transition him to an insulin-to-carb ratio at mealtimes.

Ht: 6’1
Wt: 102 kg
BMI: 29.6
TDD=51

What is his CF?

Hint: Rule of 1800

Example Case Study #2…

Jared came in to the clinic and has Type 2 Diabetes that is not controlled really well. He has been on insulin but finds it frustrating that he is supposed to eat a certain amount of carbs at each meal. The doctor is wanting to transition him to an insulin-to-carb ratio at mealtimes.

Ht: 6’1
Wt: 102 kg
BMI: 29.6
TDD=51

What is his CF?

Hint: Rule of 1800

Answer: 1800/51= 35

1 unit of insulin with drop Jared's blood sugar approximately 35 mg/dl.

Example Case Study #2…

Jared went home and made himself supper. He checked his blood sugar before eating and it was 198 mg/dl. He remembered the doctor saying he wanted it less than 150 mg/dl. He was planning his dinner and had 54 g of total carbohydrate on his plate.

ICR: 1:10
CF: 35 mg/dl
Target Blood Sugar: 150 mg/dl

What is the meal time dose and correction he should give himself?

Example Case Study #2…

Jared went home and made himself supper. He checked his blood sugar before eating and it was 198 g/dl. He remembered the doctor saying he wanted it less than 150 g/dl. He was planning his dinner and had 54 g of total carbohydrate on his plate.

ICR: 1:10
CF: 35 g/dl
Target Blood Sugar: 150 g/dl

What is the meal time dose and correction he should give himself?

ICR= 54/10= 5.4
CF= (198-150) /35=1.4
Total: 5.4+1.4= 6.8 *(ROUND TO 7 UNITS)*

Jared will give himself 7 units of short-acting insulin to cover his meal and correct his blood sugar for going into the meal high.

Helpful APPS for Calculating Insulin-to-Carb Ratios

Jade Insulin Dose Calculator

Diabetes Personal Calculator ($0.99)

BolusCalc

InPen

Blue Loop

Helpful Resources

- Insulin Dosing Worksheet
  https://www.choa.org/~/media/files/Childrens/medical-services/diabetes/insulin-dosing-worksheet.pdf
- Diabetes Care and Education: Advanced Insulin Management Worksheet
  https://www.wcu.edu/WebFiles/PDFs/6403AdvancedInsulinManagementFinal.pdf
- Sutter Health Calculating Mealtime Insulin Worksheet
  https://www.sutterhealth.org/pdf/services/diabetes/mealtime-dose-sliding-scale.pdf

Thank you for attending!

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