Sweet Science
Carb Counting Nitty Gritty

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Children’s Hospital of Georgia
Overview

- Healthy Eating
- Food Pyramid/food groups
- Fats
- Carbohydrates
- Proteins
- Fiber
- Serving Size vs. Portion
- Nutrition Label
- Carb Counting
“Diabetic Diet”

-Antiquated term for kids/teens with T1D
-Previously 1800 calorie ADA diet, etc.
-Very, very low carbs
-Small scheduled meals with snacks in between
Exercise
- Adults should be physically active for at least 30 minutes most days of the week, children for 60 minutes.
- Sixty to 90 minutes of daily physical activity may be needed to prevent weight gain or sustain weight loss.

Old food pyramid
- Presented food groups as a hierarchy, with grains as the base of a healthy diet, and each group having a suggested number of servings.

Emphasized limits on fats, oils and sweets, which were represented as the tip of the pyramid.

Most fat should be from fish, nuts and vegetable oils.
Limit solid fats, such as butter, margarine or lard.
Keep consumption of saturated fats, trans fats and sodium low.
Choose foods low in added sugar.

Food Groups

- **Grains**
  -推荐：每天吃半份全谷物。
  -每日量：6 oz.

- **Vegetables**
  -推荐：多样化蔬菜。
  -每日量：2.5 cups

- **Fruits**
  -推荐：吃各种水果。
  -每日量：2 cups

- **Milk**
  -推荐：低脂或非脂奶。
  -每日量：3 cups

- **Meat and beans**
  -推荐：吃瘦肉、海鲜和豆类。避免油炸。
  -每日量：5.5 oz.

Recommended nutrient intakes at 12-calorie levels can be found on mypyramid.gov.
Grains

• Includes bread, cereal, rice, pasta
• Contains: carbs, B vitamins, minerals
• Serving Sizes
  1 slice bread
  1 oz. ready to eat cereal
  ½ cup COOKED cereal, rice, pasta
Vegetables

• Includes vegetables, vegetable juice
• Contains: vitamins, minerals, carbs
• Serving Sizes:
  1 cup raw leafy vegetables
  ½ cup other vegetables (cooked or raw)
  ¾ cup vegetable juice
Fruit

- Includes fruits
- Contains carbs, vitamins, minerals
- Serving Sizes:
  - 1 medium size apple, orange, or banana
  - ½ cup chopped, cooked, or canned fruit
  - ¾ cup of fruit juice
Milk

• Includes milk, yogurt, cheese
• Contains carbs, vitamins, minerals, Vit. D, protein
• Serving Sizes
  1 cup milk or yogurt
  1 ½ ounces of natural cheese
  2 ounces of processed cheese
Meat

- Includes meat, poultry, fish, dry beans, eggs, & nuts
- Contains: protein, iron, vitamins, minerals
- Serving Sizes:
  - 2-3 ounces of cooked lean meat, fish, or poultry
  - ½ cup cooked dry beans
  - 1 egg
  - 2 Tbsp peanut butter
  - 1/3 cup nuts

**1/2 cup of cooked dry beans/1 egg/2 Tbsp peanut butter/1/3 cup nuts counts as 1 ounce meat.**

Fats

• Use sparingly.
• Contains saturated and unsaturated fats
• Includes:
  - butter
  - vegetable oils
  - sour cream
  - cream cheese
Good Fat vs. Bad Fat

• Mono-unsaturated and Poly-unsaturated fats
  -lower risk of certain diseases by helping to reduce LDL cholesterol
  -contribute Vitamin E to diet
  -liquid at room temp and solid when chilled
    Examples: olive oil, canola oil, corn oil

• Trans Fats:
  Examples: foods processed with partially hydrogenated oil

• Saturated Fats:
  Examples: red meat, butter
Mono-Unsaturated Fats

- lower risk of certain diseases by helping to reduce LDL cholesterol
- contribute Vitamin E to diet
- liquid at room temp and solid when chilled

Examples: olive oil, canola oil, corn oil
Poly-Unsaturated Fats

- lower LDL levels
- contribute Vit. A
- provide essential fats: omega-3 and omega-6 fatty acids
- liquid at room temp. but start to solidify when chilled.

Examples: soybean oil, corn oil, sunflower oil, walnuts, sunflower seeds, tofu

https://healthyforgood.heart.org/eat-smart/articles/polyunsaturated-fats
Trans Fats

• Natural and artificial
  - Naturally occurring: produced in gut of some animals (cows-milk)
  - Artificaly produced through chemical process
  - Cheap
  - Raise LDL and lower HDL cholesterol, triglycerides, c-reactive protein.
  - Function: enhance taste and texture make foods last longer

Examples of foods with trans fats:
Bacon, frozen pizza, fried fast foods, microwave popcorn.

https://www.nbcnews.com/health/health-news/trans-fat-ban-saved-lives-new-york-study-shows-n745631
Carbohydrates

- Two Types:
  1. Simple
  2. Complex

- Sugars (simple)
- Sugar Alcohols (nonnutritive sweetener)
- Starches (complex carb)
- Dietary Fiber (complex carb)
Sugars

• Found naturally in many foods
• Added to many foods/beverages
• Function: along with starches, are body’s main source of glucose, which is the primary source of energy. Also used to sweeten, preserve food.
Sugar Alcohols

- Found naturally in small amounts of fruits/vegetables
- Commercially produced and added as low calorie sweeteners
- Examples: Isomalt, Hydrogenated Starch Hydrolysates, Mannitol, Sorbitol, Xylitol
- Function: provide sweet taste without lot of calories per gram; add bulk and texture to food, help retain moisture and prevent browning of foods
- Many “sugar free” and “no sugar added” foods contain sugar alcohols.
Sugar Alcohols cont.

• Must still look at carb count per serving.
• Often causes a laxative effect if eaten in larger than serving size or more than one serving eaten at a time.

• Carb Counting Sugar Alcohols:
  Subtract HALF of the grams of sugar alcohol listed on the food label from the total grams of carbs. Generally, not required if amount of sugar alcohols is less than 5 g.

http://www.joslin.org/info/what_are_sugar_alcohols.html
Starches

• Found naturally in some foods
• Added to other foods as a thickener or as a stabilizer
• Function: along with sugars, are main source of calories. Breaks down into glucose, which is the primary energy source.
Fiber

• Found naturally in variety of foods
• “roughage”; isn’t digested by the body
• Function: provide a “full” sensation, slows digestion, interferes with absorption of dietary fat and cholesterol (a good thing), promotes intestinal regularity
Fiber

• Two types:

1. Soluble: dissolves in water; helps lower cholesterol and blood sugar
   Examples: oats, citrus fruits

2. Insoluble: promotes movement of foods through digestive system; helps with regularity
   Examples: nuts, wheat bran
Fiber

• IF a food label lists “INSOLUBLE Fiber”, the total grams can be subtracted from the total carb grams and from the total fiber grams. IF there are 5 or more grams of fiber left, subtract HALF of the dietary fiber from the total carbs.

• IF a product has 5 or more grams of fiber, subtract HALF of that from the total carb amount.
Proteins

• Found in muscle, bone, skin, hair
• Made up of amino acids
  12 of these, the “essential” amino acids come from diet only.
• Responsible for enzymes that fuel chemical reactions in the body
• Responsible for hemoglobin

Complete Proteins

• Proteins that contain all of the essential amino acids.
• Examples: milk, meat

Foods High in Protein

- Meat and fish
- Cheese
- Eggs
- Beans
- Bread
- Hummus
- Nuts and seeds
**Changes to the Nutrition Label**

**RACCs for serving sizes updated to reflect what people are actually eating**

**Nutrition Facts**

<table>
<thead>
<tr>
<th>Serving Size 1 cookie (30g)</th>
<th>Serving Per Container 8</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amount Per Serving</strong></td>
<td></td>
</tr>
<tr>
<td>Calories 150</td>
<td>Calories from Fat 90</td>
</tr>
<tr>
<td>% Daily Value*</td>
<td></td>
</tr>
<tr>
<td>Total Fat 10g</td>
<td>15%</td>
</tr>
<tr>
<td>Saturated Fat 6g</td>
<td>30%</td>
</tr>
<tr>
<td>Trans Fat 0g</td>
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</tr>
<tr>
<td>Cholesterol 25mg</td>
<td>8%</td>
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<tr>
<td>Sodium 75mg</td>
<td>3%</td>
</tr>
<tr>
<td>Total Carbohydrate 15g</td>
<td>5%</td>
</tr>
<tr>
<td>Dietary Fiber 1g</td>
<td>4%</td>
</tr>
<tr>
<td>Sugars 10g</td>
<td></td>
</tr>
<tr>
<td>Protein 1g</td>
<td></td>
</tr>
<tr>
<td>Vitamin A 4%</td>
<td>Vitamin C 0%</td>
</tr>
<tr>
<td>Calcium 0%</td>
<td>Iron 2%</td>
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</table>

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

<table>
<thead>
<tr>
<th>Calories</th>
<th>2,000</th>
<th>2,500</th>
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<tbody>
<tr>
<td>Total Fat</td>
<td>Less than</td>
<td>85g</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>Less than</td>
<td>20g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Less than</td>
<td>300mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>Less than</td>
<td>2,400mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td></td>
<td>300g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td></td>
<td>25g</td>
</tr>
</tbody>
</table>

**Fiber has been defined**

**Nutrition Facts**

<table>
<thead>
<tr>
<th>8 servings per container</th>
<th>1 cookie (30g)</th>
</tr>
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</tr>
<tr>
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<td>150</td>
</tr>
<tr>
<td>% Daily Value*</td>
<td></td>
</tr>
<tr>
<td>Total Fat 10g</td>
<td>13%</td>
</tr>
<tr>
<td>Saturated Fat 6g</td>
<td>30%</td>
</tr>
<tr>
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</tr>
<tr>
<td>Cholesterol 25mg</td>
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</tr>
<tr>
<td>Sodium 75mg</td>
<td>3%</td>
</tr>
<tr>
<td>Total Carbohydrate 15g</td>
<td>5%</td>
</tr>
<tr>
<td>Dietary Fiber 0g</td>
<td>0%</td>
</tr>
<tr>
<td>Total Sugars 10g</td>
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</tr>
<tr>
<td>Includes 6g Added Sugars</td>
<td>12%</td>
</tr>
<tr>
<td>Protein 1g</td>
<td></td>
</tr>
</tbody>
</table>

**Footnote table goes away and statement changed to explain what DV means**

**Single Size Containers containing less than 200% of RACC must be labeled as Single Serving**

**Bigger type size for Calories & Serving Size; Calories from Fat removed**

**Updated DVs for Added Sugars, Sodium, & Fiber**

**Added Sugars are now required**

**Vitamins A & C are no longer required, Vitamin D & Potassium have been added as required along with Calcium & Iron**

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Compliance By: July 28th 2018

Manufacturers with less than $10 million annual sales will have an extra year to comply.
Serving Size vs. Portion Size

Serving Size: measured amount of food or drink on nutrition label.

Portion Size: the amount actually eaten by someone.
The Portion Size Illusion

Which plate contains the most food?

Think about it before looking at the answer below.

There is exactly the same amount of food on each plate.

MotiveWeight.Blogspot.com
## Portion Control

<table>
<thead>
<tr>
<th>Item</th>
<th>20 Years Ago</th>
<th>Today</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burger</td>
<td>333 Calories</td>
<td>590 Calories</td>
<td>257 More Calories</td>
</tr>
<tr>
<td>Soft Drink</td>
<td>85 Calories</td>
<td>250 Calories</td>
<td>165 More Calories</td>
</tr>
<tr>
<td>Pizza</td>
<td>500 Calories</td>
<td>850 Calories</td>
<td>350 More Calories</td>
</tr>
<tr>
<td>Donut</td>
<td>210 Calories</td>
<td>500 Calories</td>
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<tr>
<td>Spaghetti</td>
<td>500 Calories</td>
<td>1,025 Calories</td>
<td>525 More Calories</td>
</tr>
<tr>
<td>Popcorn</td>
<td>270 Calories</td>
<td>630 Calories</td>
<td>360 More Calories</td>
</tr>
</tbody>
</table>
Approximately Measuring...

- **FIST**: Equal to 1 cup is a portion of rice, fruits or vegetables.
  - 200 kcal
- **FINGERTIP**: Equal to 1 teaspoon is a portion of fats like mayonnaise or butter.
  - 35 kcal
- **CUPPED HAND**: Equal to 1/2 cup or 1 ounce is a portion of snacks like nuts or dried fruits.
  - 170 kcal
- **THUMB**: Equal to 2 tablespoons is a portion of dairy and peanut butter.
  - 170 kcal
- **PALM**: Equal to 3 ounces is a portion of protein like red meat or chicken.
  - 100 kcal

1 teaspoon
- Use this for oil and butter
1 tablespoon
- 1 ounce of cheese
3 ounce
- To measure your meats
1/2 cup
- Equivalent to size of computer mouse.
1 cup
- For cooked vegetables
Carb Counting

Carb counting:
- helps gain tighter control of blood sugars;
- allows flexibility over how much of a carb you want to eat;
- all foods/fluids containing carbohydrates will need to be counted when eaten.

- Although carb counting, still need to make good, healthy choices. It is NOT a reason to eat all the carbs desired.
Carbs are found in more than just starchy/sweet foods.

• The following food groups all contain carbs:
  - Grains
  - Fruits
  - Milk
  - Starchy Vegetables
  - Meat (IF it’s breaded.)
Non-Carbohydrate Categories

• Meats & Protein: beef, chicken, turkey, seafood, eggs, cheese, tofu
• Fats: oils, butter, margarine, sour cream, mayonnaise
• Non-Starchy Vegetables: any vegetable that is bring in color, can be eaten raw, and usually found in a salad

• HOWEVER, large servings of these foods can affect blood sugars and add extra calories to the diet. And, if any of these non-carb foods are breaded or have a crust, then they have added carbs. As in anybody’s diet, the serving sizes of these foods should be controlled to maintain a healthy diet and weight.
Today You Had...

- Breakfast:
- Snack:
- Lunch:
- Snack:
More Food In The Bowl

• Make a meal out of the foods on your table as a group.
• Calculate the carbs in your meal.
Now... How About That Fast Food

• Pick your meal as a group. Calculate carbs.

• Ooops, now you want seconds of at least one food. Add in those carbs.

• What if you had already given insulin for the first set of carbs?
Let’s Suppose You are a Grazer...

• You had a handful of Goldfish crackers at 9am.

Carbs:
• At 10am you had two miniature Reece’s Peanut Butter Cups.
At 10:30 you decided you needed something salty and had a lunchbox bag of Cheetoes and an 8 ounce Coke.

Carbs:
• You needed something “healthy”, so you had a cutie at 11am.
  Carbs:
• Then, you had a meeting and needed a piece of peppermint, but had two instead.
  Carbs:
• How many carbs did you eat grazing between 9am and 11am?
• How many carbs have you eaten during this session? Seriously, please add them up.
It’s All About Choices
Fast Food Healthy Choices

- Do NOT “biggie” size.
- Choose something green-side salad.
- Grilled or baked over fried.
- Choose low fat condiments.
- Drink Water with meal.
- Avoid a buffet.
- Salad dressing on the side.

http://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/fast-food/art-20047179
In the Hospital...

- Are all foods served on hospital food trays to kids with diabetes low carb?
- Are all tickets with carb counts on trays served to kids with diabetes correct?
- Do graham crackers/saltine crackers have carbs?
- Do juice cups have carbs?
- Is insulin given BEFORE a meal?
Breakfast

2 Scrambled Eggs = 0 grams carbs
1 Piece Toast = 12 grams carbs
1 Tbsp. Grape Jelly = 13 grams carbs
2 Slices Bacon = 0 grams carbs
1 Cutie = 9 grams carbs
Breakfast

2 Scrambled Eggs = 0 grams carbs
1 Piece Toast = 12 grams carbs
1 Tbsp. Grape Jelly = 13 grams carbs
2 Slices Bacon = 0 grams carbs
1 Cutie = 9 grams carbs

Total: 34 grams carbs
School Lunch

- Sausage Pizza  1 slice  40 g
- Corn on Cob    1 piece  14 g
- Salad         side salad  0 g
- Ranch Dressing 1 Tbsp  1 g
- Potato Smiles 1 serving  15 g
- Peach Cobbler 1 serving  40 g
- Chocolate Milk 1 8oz serving  26 g
<table>
<thead>
<tr>
<th>Item</th>
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<tr>
<td>Salad</td>
<td>side salad</td>
<td>0 g</td>
</tr>
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</tr>
<tr>
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<td>1 serving</td>
<td>40 g</td>
</tr>
<tr>
<td>Chocolate Milk</td>
<td>1 8oz serving</td>
<td>26 g</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>136 g</strong></td>
</tr>
</tbody>
</table>
## Snack Time

- **Peanut Butter**  
  - 1 Tbsp.  
  - 1 To Go Cup
- **Apple**  
  - 1 small apple
- **Bag of Doritos**  
  - 1 small bag  
  - 1 grab bag
- **Coca Cola**  
  - 1 reg can
- **Snickers**  
  - 1 regular bar  
  - 1 fun size bar
Food is Medicine for Kids with Type 1 Diabetes