

A group of young people are walking on a log on a rocky beach. The log is positioned horizontally across the frame, and the group is moving from left to right. The background shows a large body of water and a hazy sky. The overall mood is active and outdoorsy.

JDRF typeone nation

NUTRITION FOR CHILDREN AND TEENS WITH T1D

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Outline

- Nutrition requirements and dietary recs of kids and teens
- Reality of food intake
- Nutrition and its effects on the body
- Disordered eating
- Practical tips to improve overall eating habits

Nutritional requirements of kids and teens

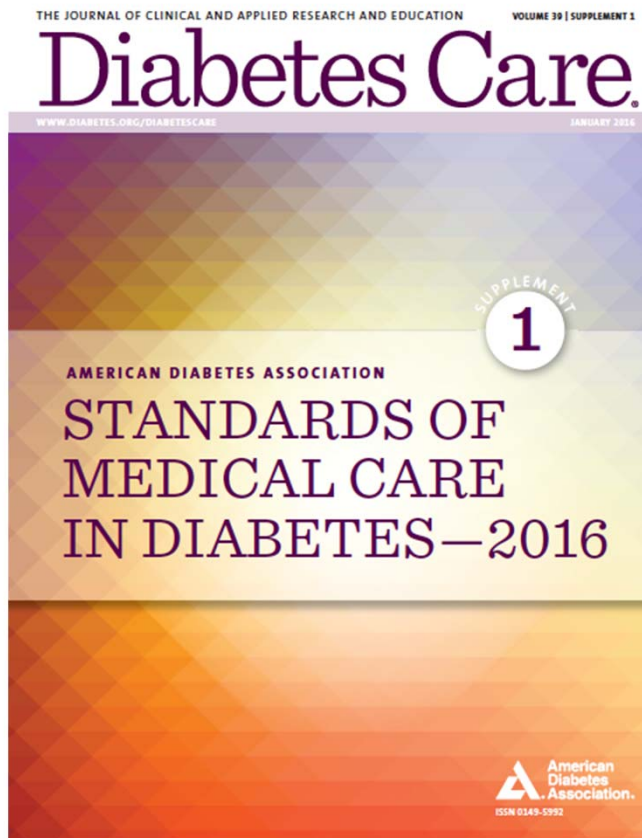
- Growth and development are rapid
- Onset of puberty – characterized by a spurt in height and weight
- Considerable gain in muscle and bone mass
- Changes in body composition
 - Increased fat in girls
- Energy and nutrient requirements are at their highest

Healthy eating habits are important for kids and teens

Eating a healthy, balanced meal plan can:

- Promote well being by improving mood, energy and self-esteem to help reduce anxiety and stress
- Boost concentration and performance
- Reduce the risk of additional chronic conditions in the future
 - Heart disease
 - Cancer
 - Obesity
- Increase productivity and reduce days off sick

Nutrition recommendations for diabetes








- An individualized MNT (medical nutrition therapy) program provided by a registered dietitian is recommended for all people with diabetes.
- As there is no single ideal dietary distribution of calories among carbohydrates, fats, and proteins for people with diabetes, distribution should be individualized.
- Carbohydrate intake from whole grains, vegetables, fruits, beans and dairy products, with an emphasis on foods higher in fiber and lower in glycemic load, should be advised over other sources, especially those containing added sugars.
- <2300 mg sodium per day
- Choose more unsaturated fats

Dietary Guidelines 2015-2020



- Follow a healthy eating pattern across the lifespan
- Focus on variety, nutrient density and amount.
- Limit calories from added sugars and saturated fats and reduce sodium intake
- Shift to healthier food and beverage choices
- Support healthy eating patterns for all.

General Meal Plan Recommendations – <12 years






				
<p>1 1/2 cups</p>	<p>2 cups</p>	<p>5 ounces</p>	<p>5 ounces</p>	<p>3 cups</p>
<p>Focus on whole fruits</p> <p>Focus on whole fruits that are fresh, frozen, canned, or dried.</p>	<p>Vary your veggies</p> <p>Choose a variety of colorful fresh, frozen, and canned vegetables—make sure to include dark green, red, and orange choices.</p>	<p>Make half your grains whole grains</p> <p>Find whole-grain foods by reading the Nutrition Facts label and ingredients list.</p>	<p>Vary your protein routine</p> <p>Mix up your protein foods to include seafood, beans and peas, unsalted nuts and seeds, soy products, eggs, and lean meats and poultry.</p>	<p>Move to low-fat or fat-free milk or yogurt</p> <p>Choose fat-free milk, yogurt, and soy beverages (soy milk) to cut back on your saturated fat.</p>



Limit Drink and eat less sodium, saturated fat, and added sugars. Limit:

- Sodium to **2,200 milligrams** a day.
- Saturated fat to **18 grams** a day.
- Added sugars to **40 grams** a day.

General Meal Plan Recommendations – teens

				
2 cups	2 1/2 cups	6 ounces	5 1/2 ounces	3 cups
<p>Focus on whole fruits</p> <p>Focus on whole fruits that are fresh, frozen, canned, or dried.</p>	<p>Vary your veggies</p> <p>Choose a variety of colorful fresh, frozen, and canned vegetables—make sure to include dark green, red, and orange choices.</p>	<p>Make half your grains whole grains</p> <p>Find whole-grain foods by reading the Nutrition Facts label and ingredients list.</p>	<p>Vary your protein routine</p> <p>Mix up your protein foods to include seafood, beans and peas, unsalted nuts and seeds, soy products, eggs, and lean meats and poultry.</p>	<p>Move to low-fat or fat-free milk or yogurt</p> <p>Choose fat-free milk, yogurt, and soy beverages (soy milk) to cut back on your saturated fat.</p>



Drink and eat less sodium, saturated fat, and added sugars. Limit:

- Sodium to less than 2,200 milligrams a day.
- Saturated fat to 22 grams a day.
- Added sugars to 50 grams a day.

Portion sizes are crucial



**½ cup portion
of cooked black beans =
2 ounce-equivalents
protein foods**



**4 ounce portion
of chicken =
4 ounce-equivalents
protein foods**



**1 slice of bread =
1 ounce-equivalent grains**



**½ cup portion
of cooked brown rice =
1 ounce-equivalent grains**



**½ cup portion
of strawberries =
½ cup-equivalent
fruit**



**¾ cup portion
of 100% orange
juice =
¾ cup-equivalent
fruit**



**¼ cup portion
of raisins =
½ cup-equivalent
fruit**



**½ cup portion
of green beans =
½ cup-equivalent
vegetables**



**1 cup portion
of raw spinach =
½ cup-equivalent
vegetables**



**1 large egg =
1 ounce-equivalent
protein foods**



**2 tablespoons of
peanut butter =
2 ounce-equivalents
protein foods**



**1 ounce portion
of almonds =
2 ounce-equivalents
protein foods**

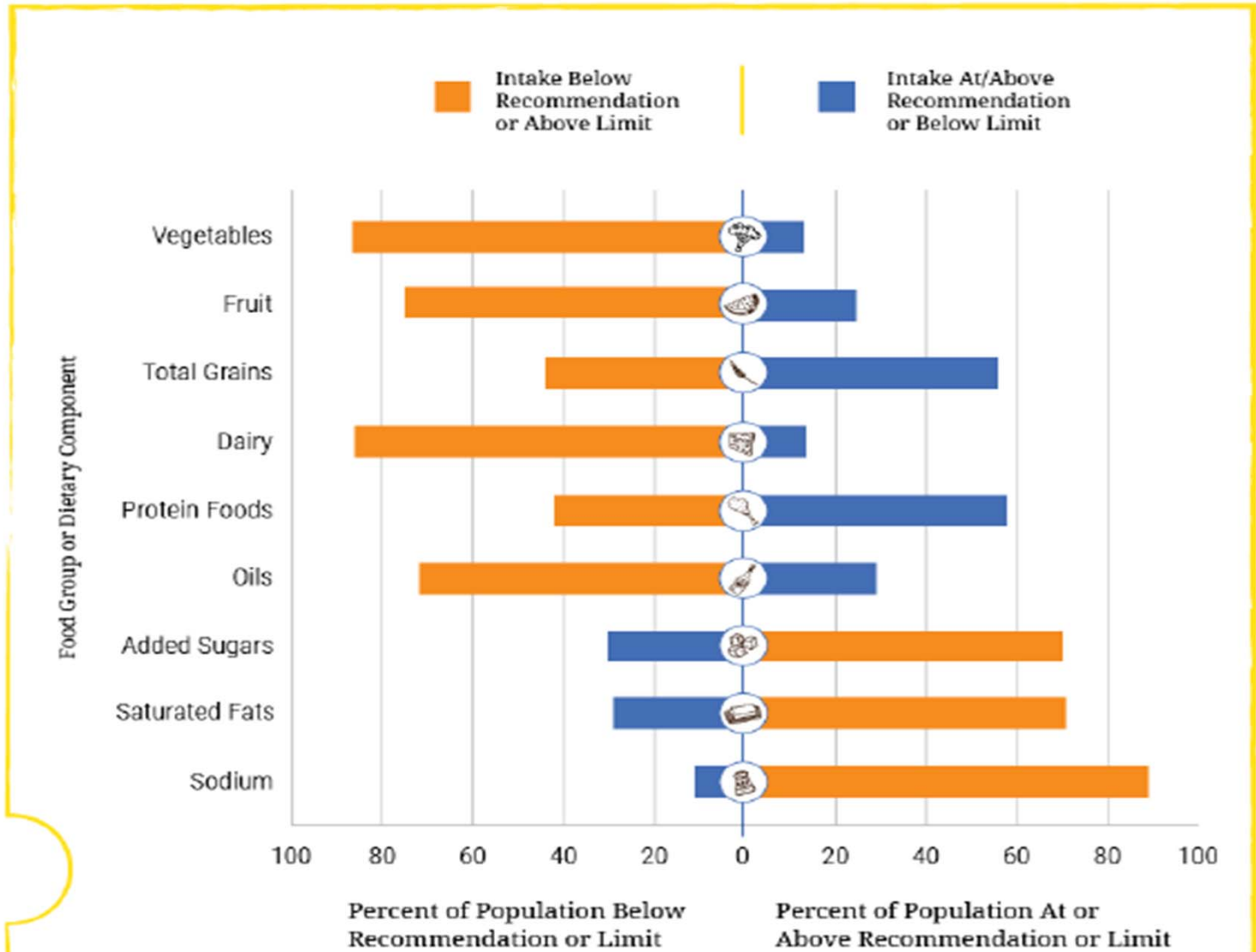


**6 ounce portion
of fat-free yogurt =
¾ cup-equivalent dairy**



**1½ ounces portion
of cheddar cheese =
1 cup-equivalent dairy**

Dietary Intakes Compared to Recommendations



The Realities of Eating in the US



87% of Americans consume **less** than the recommended **2½ cups** of vegetables per day.

- Vegetable consumption is lowest among preteens and teens
- 30% of pre-teens and teens eat <1 serving per day
- Average intake 1.2 servings per day
- Potatoes and tomatoes are the most commonly consumed vegetables, accounting for 21% and 18% of all vegetable consumption

The Realities of Eating in the US



86% of Americans consume **less** than the recommended **3 cups** of dairy per day.

- Dairy intake is below suggested amounts for all age-groups except children under 4.
- Adolescents fail to meet the goals of 3-4 servings of dairy per day
 - Only 1/3 of teens meet the goals

The Realities of Eating in the US



75% of Americans consume **less** than the recommended **2 cups** of fruits per day.

- About 1/3 of the fruit consumed in the US comes from fruit juice, while the rest comes from fresh, cooked, canned, froze, and dried fruits.
- Average of 1.4 servings per day
- 30% of high school students eat less than 1 serving of fruit per day

The Realities of Eating in the US



72% of Americans consume **less** than the recommended **27 g** of oils per day. That's about two tablespoons.

- Oils are mostly consumed in packaged foods, like salad dressings, mayo, prepared vegetables and snack chips, as well as nuts and seed.

The Realities of Eating in the US



44% of Americans consume **less** than the recommended **6 oz** of grains per day. That's about 6 slices of bread, or 1½ bagels.

- While Americans are consuming enough grains, more whole grain is recommended.
- Average teen consumes <12 grams fiber per day (recommended intake – 20-35 grams)

The Realities of Eating in the US



42% of Americans consume **less** than the recommended **5½ oz** of proteins per day. That's about 1 chicken breast, or 6 tbps of peanut butter.

- More than half the population is meeting or exceeding the recommended protein intake, but people are not eating enough from two protein subgroups – seafood and nuts.

The Realities of Eating in the US



89% of Americans consume **more** than the recommended limit of **2,300 mg** of sodium per day. That's about one teaspoon.

- Average daily sodium intake for males: 4,240 mg; women: 2,980 mg
- The majority of sodium intake is from eating processed foods.

The Realities of Eating in the US



71% of Americans consume **more** than the recommended limit of **200 calories** of saturated fat per day.

- Recommendations to replace saturated fat with unsaturated fats, found in fish and vegetable oils.
- Majority of fats teens consume are in processed foods, fast foods, snacks

The Realities of Eating in the US

Added Sugars



70% of Americans consume **more** than the recommended limit of **200 calories** of added sugars per day.

- The average American consumes almost 270 calories from added sugars each day, predominantly from sugar-sweetened beverages and snacks and sweets.
- Teens tend to consume ~500 calories from added sugars (equivalence of 28 teaspoons)

Healthy People 2020 Nutrition Objectives

Food and Nutrient Consumption (>2 y/o)	2020 Targets for average intake
Increase fruits	0.9 cup per 1000 calories
Increase vegetables with at least 1/3 from dark green or deep yellow vegetables	1.14 cup-equivalents per 1000 calories
Reduce calories from solid fats and saturated fats	No more than 16.7% of total calories <9.5% saturated fat
Reduce added sugars	No more than 10.8% of total calories
Increase calcium intake	1300 mg/day

Cultural Considerations

- Where to find carbohydrate information for cultural foods
 - www.calorieking.com
 - <http://lanic.utexas.edu/la/region/food/> (Latino resources)
 - <http://oldwayspt.org/resources/heritage-pyramids/latino-diet-pyramid>
 - <http://oldwayspt.org/resources/heritage-pyramids/asian-diet-pyramid>
 - <http://www.mhlw.go.jp/bunya/kenkou/pdf/eiyousyokuji5.pdf>
 - <http://www.fao.org/infoods/infoods/tables-and-databases/en/>
- Each culture have different priorities for foods
- Latino population
 - Weighing rather than measuring rice will yield more accuracy in carb amount
 - Measure beans for accurate carb counting
- Asian population
 - Low dairy intake
 - Chinese
 - Weighing rice
 - Japanese
 - Typical sushi roll piece – 10-15 grams carb
- Middle East

Its Never Just about the Carbs....

- What else affects blood sugars?
 - Composition of the meal
 - Timing of the meal
 - Timing of the insulin dose
 - Physical activity
 - Blood Glucose level
 - Stress level
 - Illness
 - Site absorption/length of time infusion set is inserted
 - Age of the insulin used

- Work on one issue at a time to rule out its effect on BGs

Food Label Accuracy

- Factors affecting accuracy:
 - Variability in food nutrients and manufacturing process
 - Soil quality
 - Weather
 - Combining ingredients
- FDA does acknowledge this and allows for a 20% margin of error when **no claims are made**
- However, VOLUME can be affected the most IF someone is consuming the entire package of a food product, leading to inaccuracies in carbohydrate content

Accurately Counting Carbs

- To MEASURE vs. WEIGH
 - Ideally, if someone is at home, weighing is the most accurate
 - Measuring can aid in better estimating when not at home
- The effect of foods is VERY individualized
 - Blood glucose monitoring is key to assess the effect of foods on BG
 - Use of CGM is ideal to identify if timing of dose in relation to the digestion of the meal is accurate

How does Glycemic Index fit in?

- GI = measures how a carb-containing food raises BG
 - Foods are ranked based on how they compare to a reference food (glucose or white bread)
- Ideally, choose foods with a low or medium GI
- However, combine higher GI with low GI foods to blunt the BG response
- What affects GI of a food?
 - Fat
 - Fiber
 - Processing
 - Cooking

Factors that affect GI

- Ripeness and storage time
 - The more ripe a fruit or vegetable, the higher the GI
- Processing
 - Juice, mashed potatoes
- Cooking method
 - Al dente pasta vs soft-cooked

Thoughts on GI

- GI does not take into consideration portion size– carb amt is still relevant
- GI will be altered with the composition of a meal
- GI does not always mean it will affect BGs the same for everyone
- High GI does not mean “bad”
- If after meal BGs are widely fluctuating, reviewing the GI of a food is a good idea
 - May mean a change in timing of the dose

Glycemic Index of Select Foods

Food	Rating	GI
Yogurt	Low	14
Skim milk	Low	32
White rice	Medium	58
Hamburger bun	Medium	61
Watermelon	High	72
Baked potato	High	85

Fibers/Sugar Alcohols

- Based on “Choose Your Foods”:
 - If the food contains >5 grams *fiber*, subtract half the grams of fiber from the carbohydrate grams to get the total carbohydrate grams
 - If the food contains >5 grams sugar alcohols, subtract half the grams of sugar alcohols from the carbohydrate grams to get the total carbohydrate grams
- ONLY use if hypoglycemia occurs after foods with >5 grams fiber or sugar alcohols

How do you match the insulin with the meal?

- Extended bolus/dosing
 - Can use with insulin injections as well as the insulin pump
 - Used for meals with:
 - High fat
 - High protein
 - High carb
 - Higher volumes = slowed digestion
 - How do you know if extended bolus is needed?
 - If you know you are using the correct carb ratio and 2 hour after meal BG is low or back to goal range
 - Try 50% right away and 50% over 2-4 hours

Extended/Dual Wave Bolus Use

- Pizza, Fast food, Chinese food
 - Need to experiment with the extended bolus AT LEAST 2-3 times to confirm it action
 - Check BG before the meal and every 2 hours until 2 hours after extended bolus ended
 - Ex. For pizza, typically takes 6-8 hours to digest; extended bolus for 4-6 hours
 - Check BG before pizza and every 2 hours for 6 hours
 - If BGs are within 30-50 points of goal at each time point and within goal at last timepoint, % and length of time is correct for that food/meal

Other likely variables.....

- Assess site absorption
 - Infusion sets
 - Long acting vs. rapid acting insulin sites
 - Site in relation to physical activity
- Temperature/length of time using same insulin vial/pen
- Temperature outdoors/indoors
- Effect of physical activity
 - Type vs. length of time

Eating disorders

- Defined as an eating pattern that becomes harmful to health
 - Exclusion of specific foods or food groups
 - vegetarianism
 - Adopting reduced-energy meal plans of fad diets
 - Skipping meals
 - Binge eating
 - Fasting
 - Self-induced vomiting
 - Using laxatives, diet pills, diuretics
 - Excessive exercising
- Can affect anyone, but tends to be more prevalent in young women
 - More likely to present at an older age with accompanying mood disorder
 - Can affect males at an earlier age – not typically anorexia or bulimia (1)
- Trigger is multi-factorial but often linked to emotions
- An individuals with T1D is 2.5x more likely to develop an eating disorder than one without T1D.

Eating disorders

■ Diabulimia / ED-DMT1

- Estimated that >30% of individuals with type 1 diabetes purposefully omit their insulin for weight loss.
 - Can be a means to regain control

■ Signs and Symptoms

- Changes in eating habits (typically eating more but still losing weight)
- Rapid weight loss or weight gain
- Poor metabolic control despite the appearance of compliance
- Low self-esteem or preoccupation with body image, weight or food intake
- Frequent urination, excessive thirst or high BGs
- Low energy, fatigue, shakiness, irritability, confusion, anxiety
- Purging behaviors
- Discomfort with eating or taking insulin in front of others
- Hoarding food

- Recurrent DKA

Resources for eating disorders

- We Are Diabetes
 - www.wearediabetes.org
- National Eating Disorders Association
 - <http://www.nationaleatingdisorders.org/resource-links>
- Eating Disorder Hope
 - <http://www.eatingdisorderhope.com>

Practical tips for healthier changes



Practical Tips

- Use Choose My Plate as a guide for a healthy diet
- Recommend reduced fat dairy and animal products
- Adolescent girls should be advised to consume iron-rich foods with foods rich in vitamin C for better absorption
- Calcium intake is essential for bone health
- Eat breakfast – skipping meals will not lead to weight loss
- Promote nutrient-dense snacks to help fill nutrient gaps
- There are no “good”, “bad”, “safe”, or “fattening” foods
- No one body type is ideal and adolescents’ bodies develop at different rates

Practical Tips

- Better blood glucose control can lead to weight gain
 - Annually meeting with a RDN can help assess total intake and actual overall meal planning needs
- Change takes time
- Make small changes to eating habits
- There is no such thing as perfection!
- There is no ONE SIZE FITS ALL