COMPLIMENTARY WEBINAR

The Power of Protein in Diabetes and Weight Managment

PRESENTED BY

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EARN
1 CEU
FREE

March 22, 2023
2-3pm ET

Heartland Food Products Group #22971 has been approved by the CDR to offer 1.0 CPEU for this webinar.

Learning Objectives

After completing this activity, nutrition professionals will better be able to:

1. Recommend types of proteins and intake amounts to patients with diabetes and weight management goals based on the latest guidelines.
2. Explain how protein intake affects glycemia, insulin, satiety, and weight.
3. Identify various types and sources of protein and describe current trends in protein intake.
4. Select and recommend nutrition shakes for supplemental or substitutive protein intake.

Current Protein Recommendations & Intakes

Dietary Reference Intakes (DRIs) for Protein[1]

Recommended Dietary Allowance (RDA)

0.8 grams/kg body weight/day

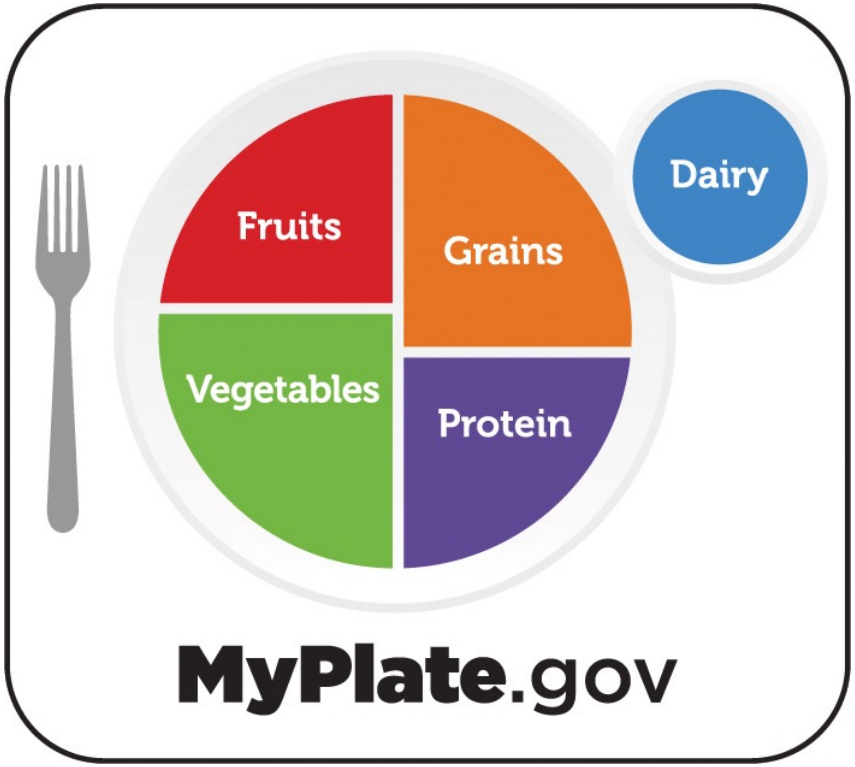
Acceptable Macronutrient Distribution Range (AMDR)

10–35% of total calories

Remember:

- ✓ DRIs are standards for the *general* adult population, not those who have disease or may be nutrient deficient
- ✓ DRIs refer to average daily intake over time
- ✓ RDA is the *minimum*, not the optimum, recommendation

MyPlate Protein Recommendation is Consistent with Typical Protein Intake in US, 13-16% of Total Calories[2,3]



- ✓ Eat a variety of protein foods
- ✓ Meat and poultry choices should be lean or low-fat
- ✓ Choose seafood options that are higher in omega-3s and lower in methylmercury
- ✓ Vegetarian protein options include beans, peas, and lentils, nuts, seeds, and soy products

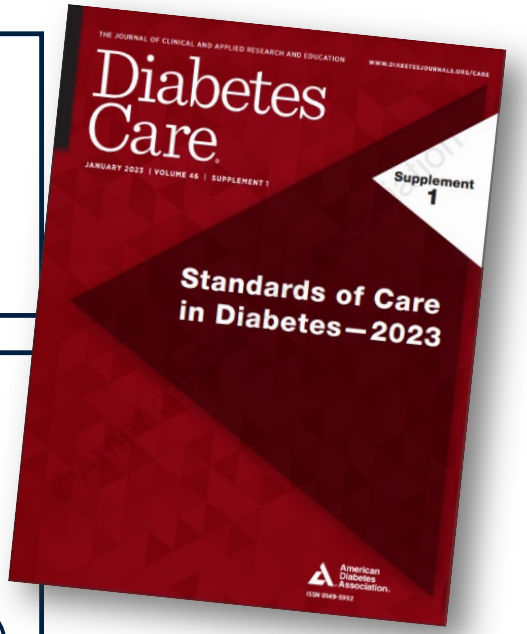
Protein Recommendations Vary Across DRIs & MyPlate

	RDA	AMDR	MyPlate
What's Needed for Calculation	Weight in kilograms	Daily calorie goal	Daily calorie goal & age
Formula	0.8 g/kg body weight/day	10–35% of total calories	N/A
EXAMPLE: Protein recommendation for 30 y/o male weighing 70 kg and aiming for 2600 calories/day	56 grams	65–227.5 grams	~100 grams 6.5 ounces protein 3 cups dairy 2 cups fruit 3.5 cups vegetables 9 ounces grains

American Diabetes Association: *Standards of Care – 2023* Protein Recommendations[4]

There is no evidence that adjusting the daily level of protein intake (**typically 1–1.5 g/kg body wt/day or 15–20% total calories**) will improve health.

Protein intake goals should be **individualized** based on current eating patterns. Some research has found successful management of type 2 diabetes with meal plans including slightly higher levels of protein (**20–30%**), which may contribute to increased satiety.



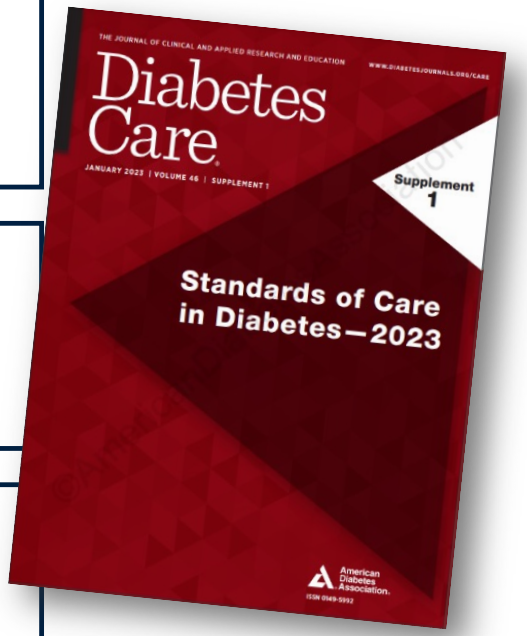
Cover image used with permission from the American Diabetes Association.

American Diabetes Association: *Standards of Care – 2023* Protein Recommendations (continued)[4]

Current evidence does not suggest that people with **diabetic kidney disease (DKD)** need to restrict protein to less than the generally recommended protein intake (**0.8 g/kg body wt/day**).

For people with **non–dialysis dependent stage 3 or higher chronic kidney disease**, dietary protein intake should be aimed to a target level of **0.8 g/kg body wt/day.**

For patients **on dialysis, higher levels of dietary protein** intake should be considered since protein energy wasting is a major problem in some individuals on dialysis.



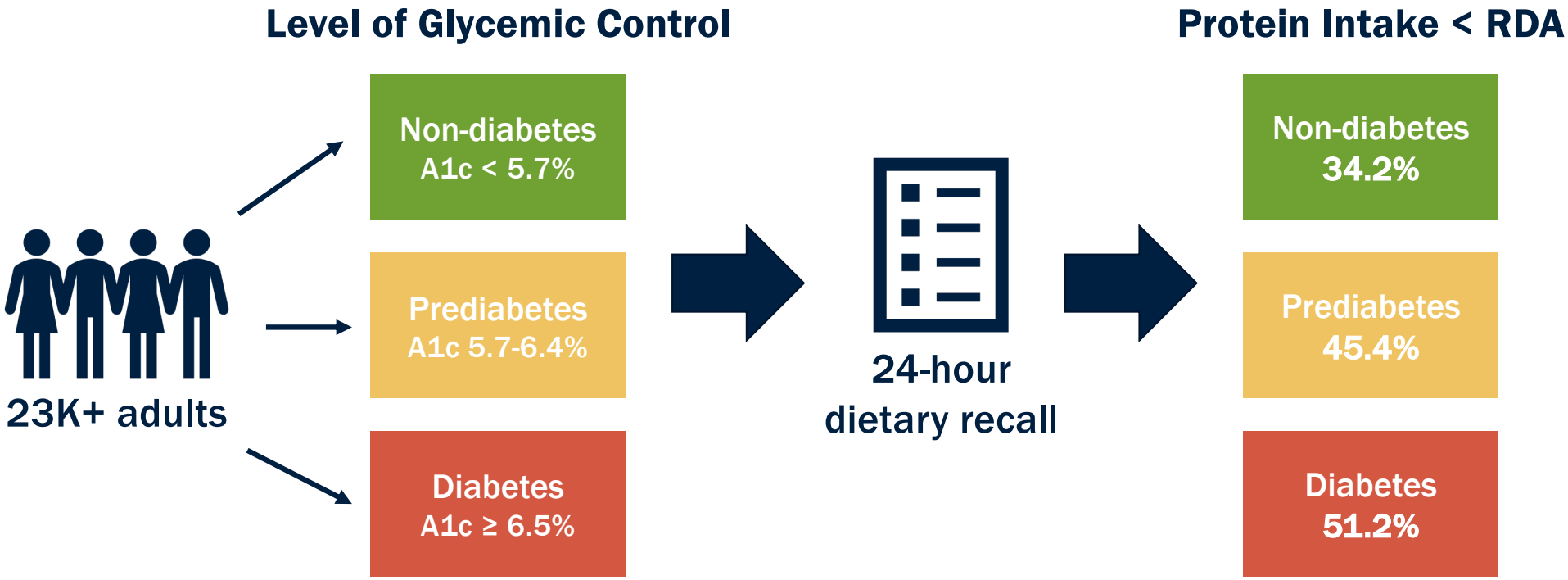
Joslin Diabetes: *Protein Guideline for Overweight & Obese Adults with Type 2 Diabetes, Prediabetes, or Those at High Risk for Type 2 Diabetes*[5]

Protein intake should range between **1.0-1.5 grams/ kg of adjusted body weight.** This amount generally accounts for **20% to 30% of total caloric intake.**

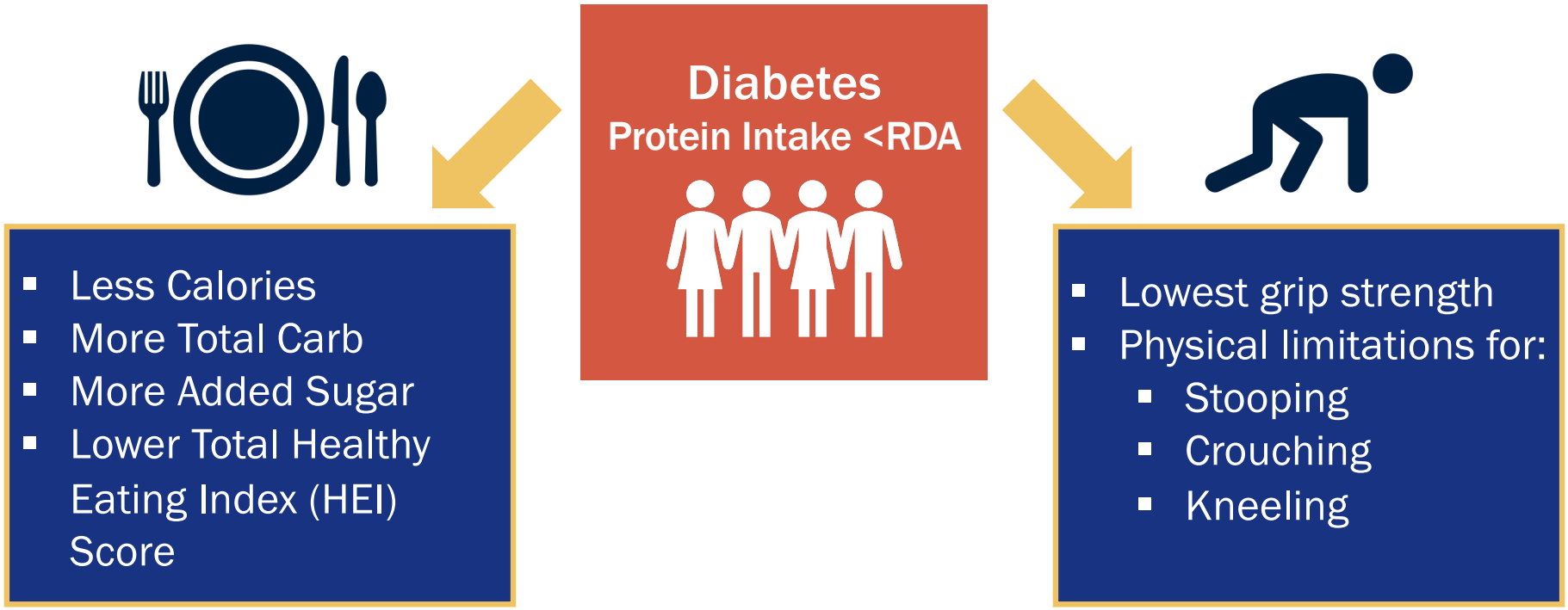
A modest increase in protein **reduces appetite and helps achieve and maintain weight reduction.** Protein also helps **minimize loss of lean body mass** during weight reduction.

No reliable scientific data support a protein intake that exceeds 2 grams/kg of adjusted body weight. Conversely, reduction of protein intake to less than 0.8 grams/kg day may result in **protein malnutrition.**

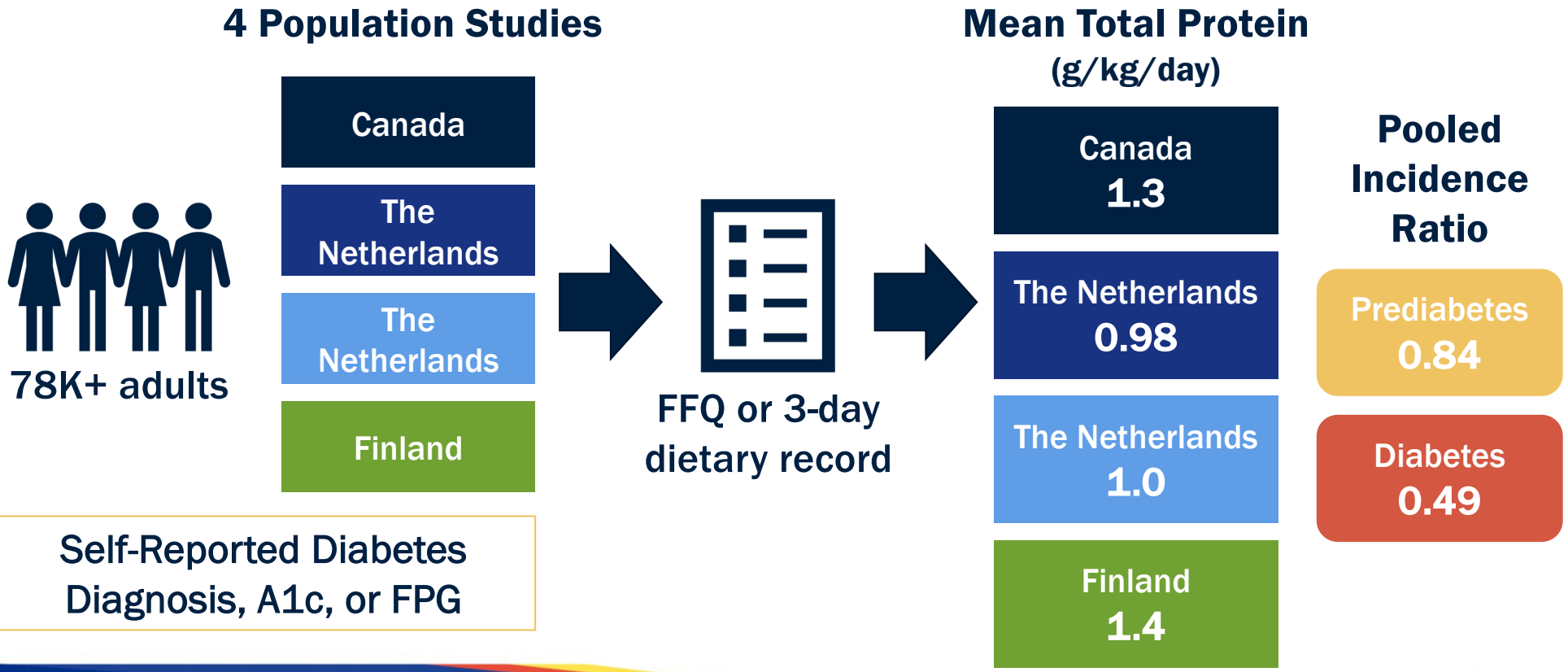
US Adults with Diabetes are Least Likely to Meet the RDA for Protein[6]



Low Protein Intake is Associated with Poor Diet Quality and Functional Limitations in US Adults with Diabetes[6]



Higher Protein Intake Associated with a Lower Risk of Prediabetes & Diabetes in Canadians & Europeans[7]



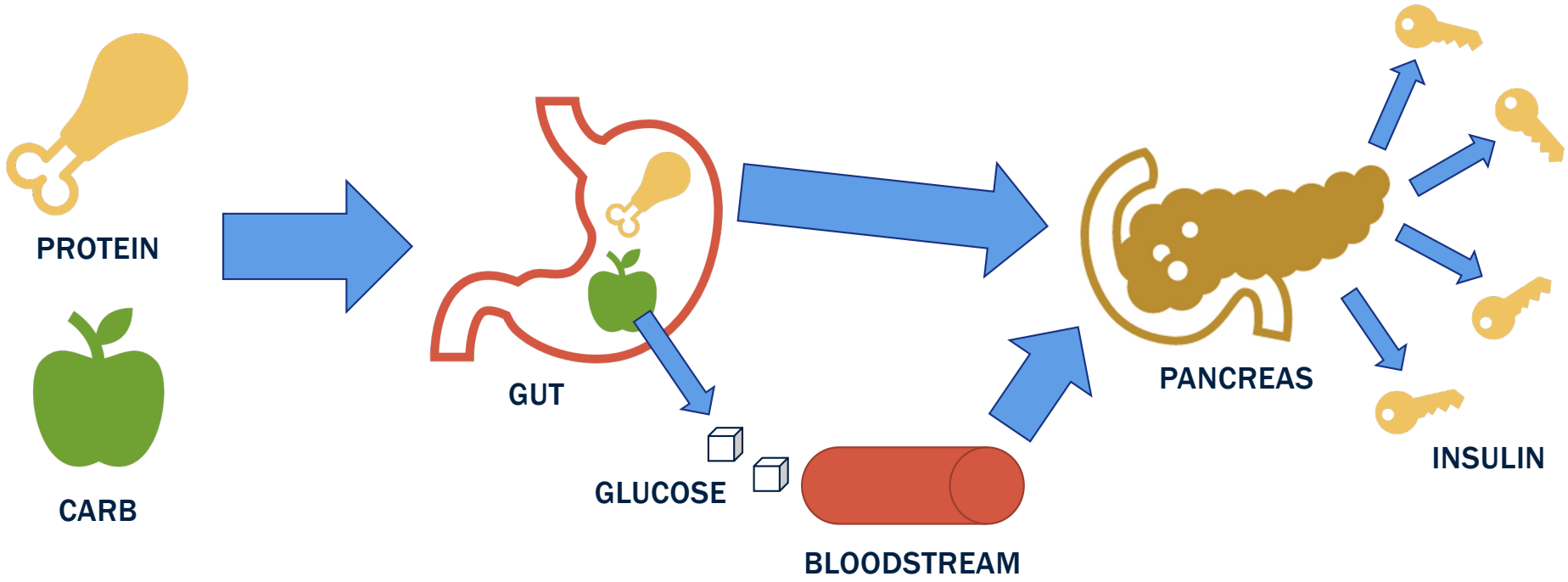
FPG = Fasting Plasma Glucose
FFQ = Food Frequency Questionnaire

Effect of Protein on Diabetes & Weight-Related Measures

TRUE OR FALSE?

50-60% of dietary protein is converted into blood glucose and enters the bloodstream 2-4 hours after consumption.

Ultimately, Dietary Protein Has Minimal Effect on Blood Glucose; Rather, it Promotes Insulin Secretion[6,7,8]



However, Large Amounts of Protein Alone Significantly Increase Postprandial Blood Glucose in People with Type 1 Diabetes[9]

Water (Control)  0 g protein

Glucose Drink  10 g, 20 g carbohydrate → 20 g glucose drink caused significantly higher pp glucose excursions from 30 min to 5 hr (no insulin given)

Protein Drink  12.5 g, 25 g, 50 g, 75 g, 100 g protein → 75 g & 100 g protein drinks caused significantly higher pp glucose excursions from 3-5 hr

Studies Showing That High-Protein Meals Can Impact Blood Glucose Demonstrate the Need for Additional Insulin Coverage[4,10]

Should I take additional insulin for high-protein meals?

How much additional insulin should I take?

It depends...

Factors to consider:[4]

- ✓ Method of glucose monitoring (meter, CGM)
- ✓ Frequency of glucose monitoring
- ✓ Insulin type (basal, bolus)
- ✓ Method of insulin delivery (injection, pump)
- ✓ Food literacy, numeracy, interest, and capability

Academy of Nutrition & Dietetics: *Dietary Approaches to Consider for Adults with Overweight or Obesity*[11]

Diet	Description
Higher-Protein Diet	**25% of total calories from protein,** 45% from carbohydrate, 30% from fat
Higher-Protein zone-type diet	5 meals/day, each with **30% of total calories from protein,** 40% from carbohydrate, 30% from fat
Moderate-protein diet	**12% of total calories from protein,** 58% from carbohydrate, 30% from fat
Meal replacement	Liquid or bar meal replacements

Macronutrient Composition of Popular Diets Compared to USDA Recommendations[12,13,14]

Diet	Carb	Fat	Protein	g/kg/day Protein*
USDA AMDR	45–65%	20–35%	10–35%	0.7–2.3
Atkins 20™	5–10%	60–70%	20–30%	1.3–2.0
Keto	5–10%	70–80%	10–20%	0.7–1.3
South Beach	28%	33%	39%	2.6
Zone	40%	30%	30%	2.0

*Based on a 2000 kcal diet and a 75 kg person

A High-Protein Diet is Thought to Increase Satiety and Thus Promote Weight Loss[12,15,16]

Mechanisms

- Increased secretion of satiety hormones (GLP-1, CCK, PYY)
- Reduced ghrelin secretion
- Increased thermic effect of food
- Elevated concentrations of plasma amino acids
- Protein-induced alterations in gluconeogenesis
- Preservation of lean body mass

Caveats

- Limiting carbs can lead lower intake of fiber and other key nutrients
- Increased acid load to the kidneys
- Increased risk of kidney stone formation
- Increased intake of animal protein can increase risk of hyperlipidemia and hypercholesterolemia
- Possible increased risk for T2DM

GLP-1 = Glucagon-Like Peptide 1
CCK = Cholecystokinin
PYY = Peptide YY

Dietary Protein's Effect on Satiety & Hunger Hormones[16]

Hormone	Protein's Effect	Mechanism of Action
Glucagon-Like Peptide 1 (GLP-1)		Delays gastric emptying, stimulates insulin secretion, and inhibits glucagon secretion
Cholecystokinin (CCK)		Releases digestive enzymes and bile from the pancreas and gallbladder, respectively
Peptide YY (PYY)		Acts on brain receptors to reduce appetite and limit food intake
Ghrelin		Acts on brain receptors to stimulate appetite, increase food intake, and promote fat storage

Protein Has a Higher Thermic Effect Than Carbohydrate and Fat, Which Can Be Helpful for Weight Loss[12,15,16]

Thermic Effect of Food (TEF) – Increased energy expenditure that results from nutrient processing (i.e., digestion, absorption, transport, metabolism, & storage)

PROTEIN	CARB	FAT
		
~15-30%	~5-10%	~0-3%

Protein Types, Sources, & Intake Trends

Protein Quality is Determined by Assessing Amino Acid Composition & Bioavailability[17]

Complete

(Contain all 9 essential amino acids)

- ✓ Animal-based protein foods
  - ✓ Meat, fish, eggs, milk products
- ✓ Soybeans and soy products
- ✓ Quinoa
- ✓ Chia seeds

Incomplete

(Lack ≥ 1 essential amino acid)

- ✓ Most plant-based protein foods
  - ✓ Beans, peas, lentils, nuts, seeds, whole grains, vegetables

Recommend consuming a variety of protein foods!

Protein Content Varies Widely Across Foods[17]

Animal-Based Protein Sources

Food	Serving Size	Protein
Chicken breast	3 ounces	26 g
Lean beef	3 ounces	26 g
Salmon	3 ounces	23 g
Tuna, canned	3 ounces	20 g
Cottage cheese	½ cup	14 g
Milk	8 ounces	8 g
Egg	1 large	6 g

Plant-Based Protein Sources

Food	Serving Size	Protein
Soybeans/tofu	½ cup	9 g
Lentils	½ cup	9 g
Kidney beans	½ cup	8 g
Peanut butter	2 tablespoons	7 g
Hummus	1/3 cup	6 g
Chia seeds	2 tablespoons	6 g
Quinoa	½ cup	4 g

Protein "Lingo" On Food Labels[17,18]

Nutrient Content Claim	Meaning	Example Food
"High" Protein	Contains **10 grams** or more per serving (20% or more of the DV per RACC)	Greek yogurt
"Good Source" of Protein	Contains **5–9.9 grams** per serving (10–19% of the DV per RACC)	Regular yogurt
"More" Protein	Contains **at least 5 grams** more* per serving (At least 10% more of the DV per RACC than reference food)	Protein shake
"Protein-Fortified"	Protein added to food during processing that was not normally present	Protein pancake and waffle mix
"Protein-Enriched"	Protein added back to food that was lost during processing	Enriched bread

*As compared to a standard serving size of regular food
RACC = Reference Amount Customarily Consumed

IFIC Surveys Reveal Consumer Viewpoints & Purchasing Behaviors Regarding Protein[19,20]

59%
Are Trying To Consume Protein

3 in 4
Identify as Omnivores

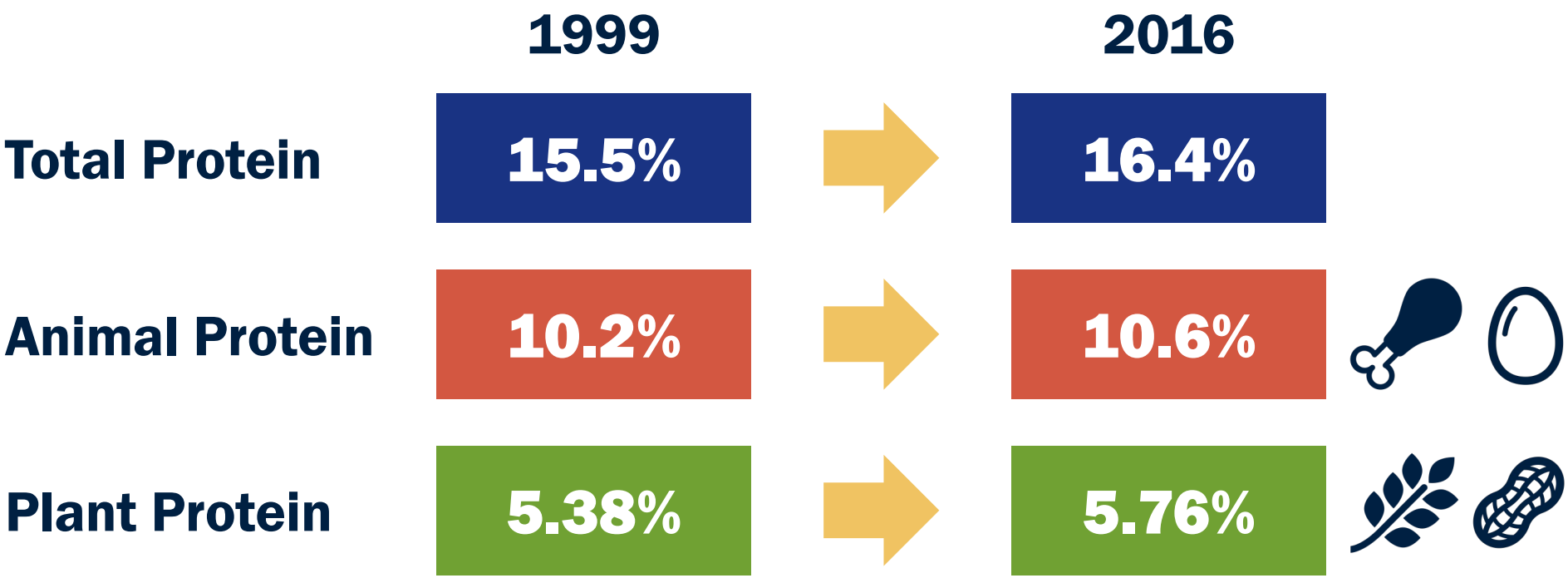
Taste
Top Consideration for Protein Choices

Balance
Top Reason for Protein Consumption

Dinner
When Most Consume Protein

3 in 10
Are Eating More Plant-Based Protein

From 1999-2016, Estimated Energy Intake from Protein Increased Among US Adults[21]



Nutrition Shakes as a Source of Protein

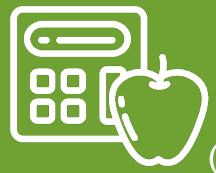
Liquid Meal Replacements as Part of Weight Loss Diet Provided Significant Benefits to People with Overweight/Obesity & Type 2 Diabetes[22]

Systematic Review & Metanalysis: 9 RCTs

961 participants

INTERVENTION

Liquid Meal Replacement
Mean dose: 20% energy
Mean kcal intake: 1500
(48% CHO, 30% PRO, 20% FAT)



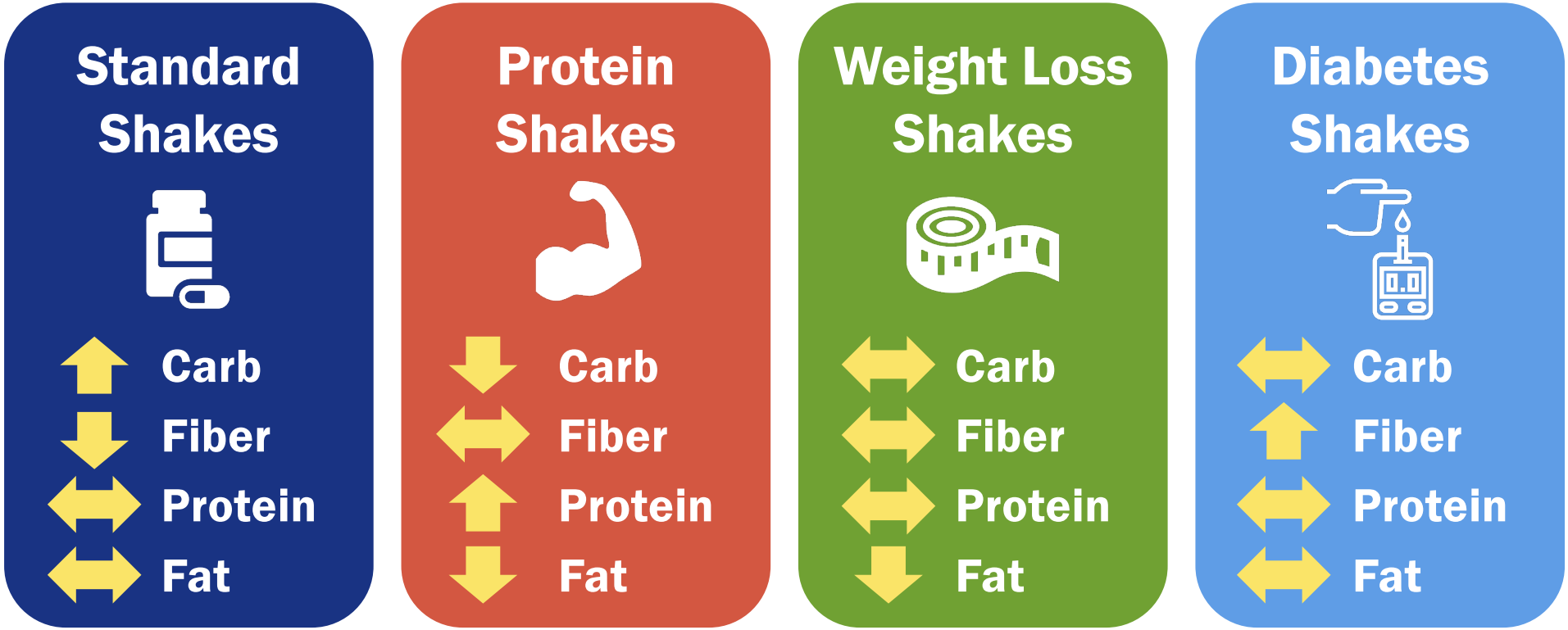
Traditional Weight Loss Diet
Mean kcal intake: 1500
(55% CHO, 25% PRO, 17% FAT)

RESULTS

Liquid Meal Replacement

- BMI
- Body Fat
- Waist Circumference
- HbA1c
- Fasting glucose
- Fasting insulin
- Systolic BP
- Diastolic BP

There Are a Variety of Nutrition Shakes Available for Different Needs & Goals



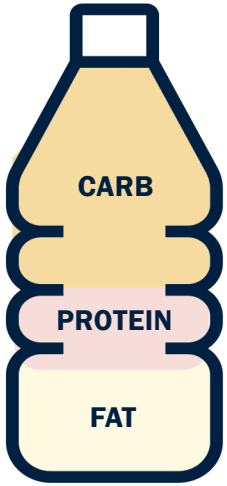
Diabetes-Specific Nutrition Shake Formulas Significantly Reduce Postprandial Blood Glucose Rise Compared to Standard Shake Formulas[23]

Systematic Review:

23 total studies (16 oral, 7 tube feeding)

784 participants (type 1 or type 2 diabetes)

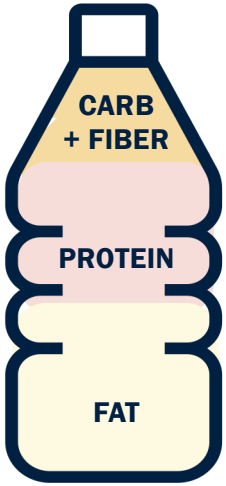
STANDARD NUTRITION FORMULA



~58% CARB
~16% PROTEIN
~26% FAT

VS.

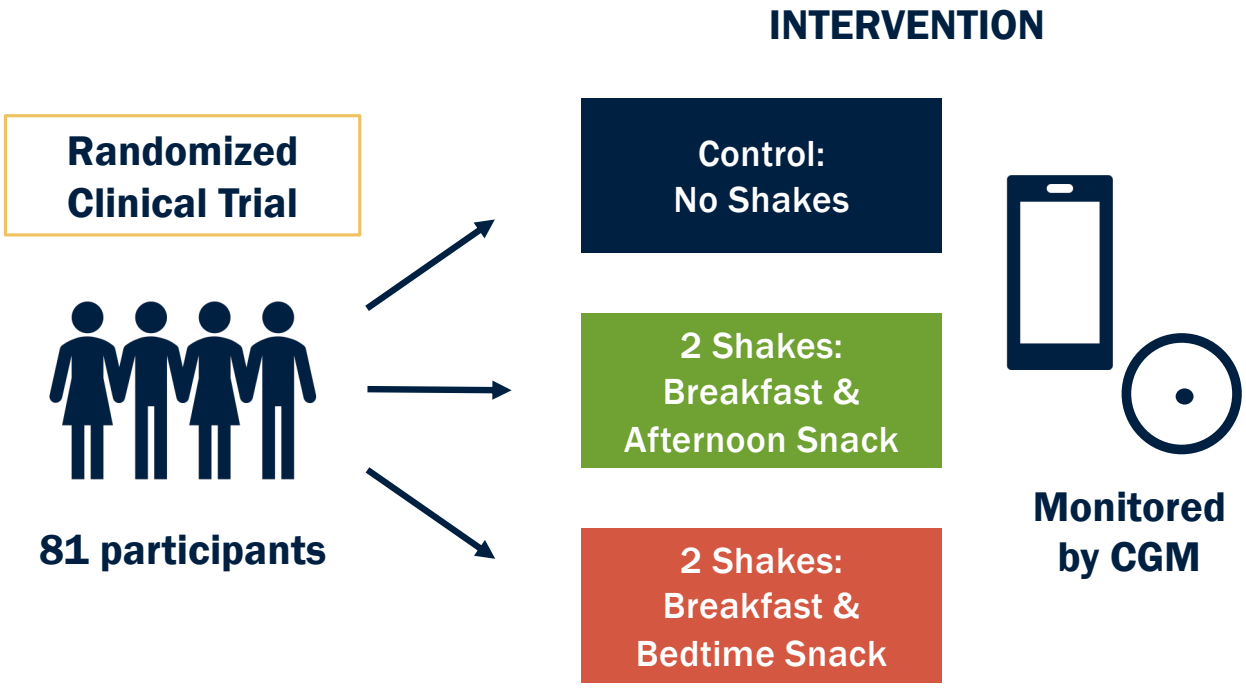
DIABETES-SPECIFIC NUTRITION FORMULA



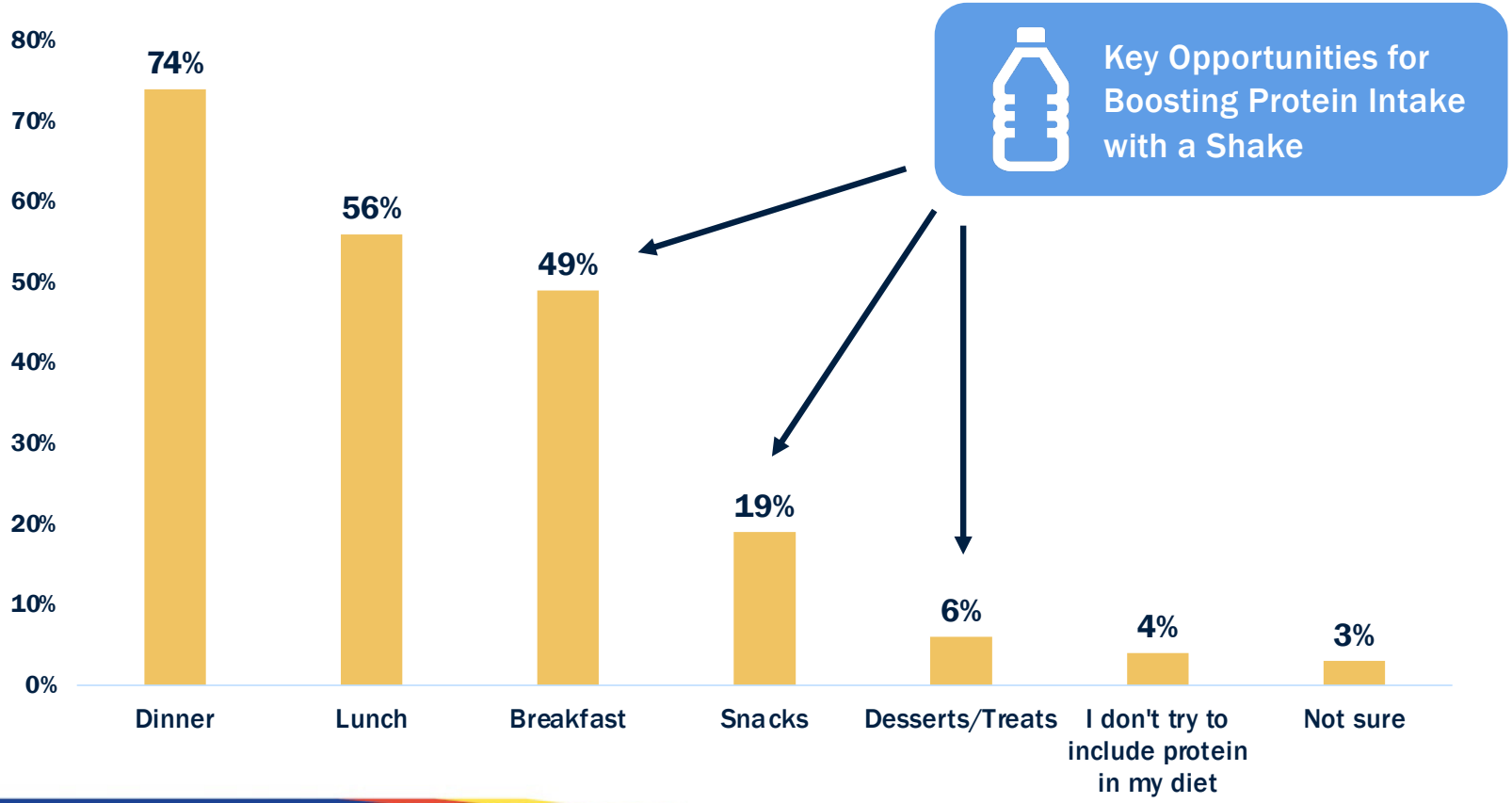
~15% CARB
~38% PROTEIN
~47% FAT

- ↓ Calories
- ↓ Carbohydrate
- ↑ Fiber
- ↑ Protein
- ↑ Monounsaturated fat

Use of Diabetes-Specific Shakes as Breakfast & Snack Improved Glycemic Control in People with Type 2 Diabetes[24]



IFIC Survey Revealed Most People Get Their Protein at Dinner and Lunch[20]



Meal Skipping Comes with Risks – Shakes Can Help Fill in the Gaps!

Skipping Breakfast[25,26]

- Associated with overweight/obesity
- Increased risk for overweight/obesity
- Consume more kcal at lunch and dinner
- Reduces daily diet quality (Healthy Eating Index Score)
- Consume less fruit, whole grains, and dairy

Skipping Dinner[26]

- Reduces daily energy intake
- Reduces daily diet quality (Healthy Eating Index Score)
- Consume less vegetables, beans, dairy, protein, and seafood

Your Patients Can Integrate Shakes into Their Daily Eating Pattern in a Variety of Ways

WHEN 

- ✓ Appetite is poor
- ✓ Don’t have a taste for traditional protein foods
- ✓ Have no time to prepare a meal or snack
- ✓ Tempted to skip a meal
- ✓ On-the-go

HOW 

- ✓ Meal or snack replacement
- ✓ Drink with a meal to boost nutrition
- ✓ As a dessert or sweet treat
- ✓ As part of a recipe

“Shake up” Shakes By Using Them in Recipes!

Add a shot of espresso!

Make overnight oats!

Make a frozen drink!

Make a smoothie bowl!

Freeze into ice pops!

Pour into a glass

Summary

- Protein recommendations vary across sources; counseling should be individualized based on patients' preferences and goals
- People with diabetes are the least likely to meet the RDA for protein, which can have nutritional and functional consequences
- Dietary protein has minimal impact on glucose and insulin, but can increase satiety and therefore help promote weight loss
- To maximize nutritional benefits, consuming a variety protein foods is recommended
- Nutrition shakes, particularly diabetes-specific shakes, provide additional benefits to people with diabetes, including weight reduction and improved glycemic outcomes


Thank you!

Questions?

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Splenda HEALTHCARE

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