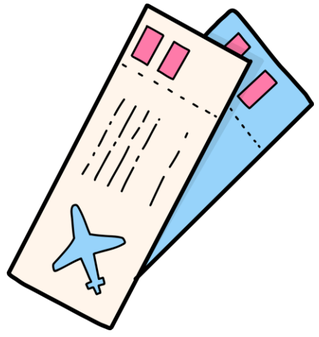


Popular Diets and How They Impact Diabetes



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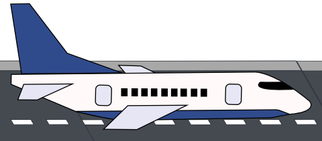
Intuitive Eating

Abbie Lambert, MS, RD, LN



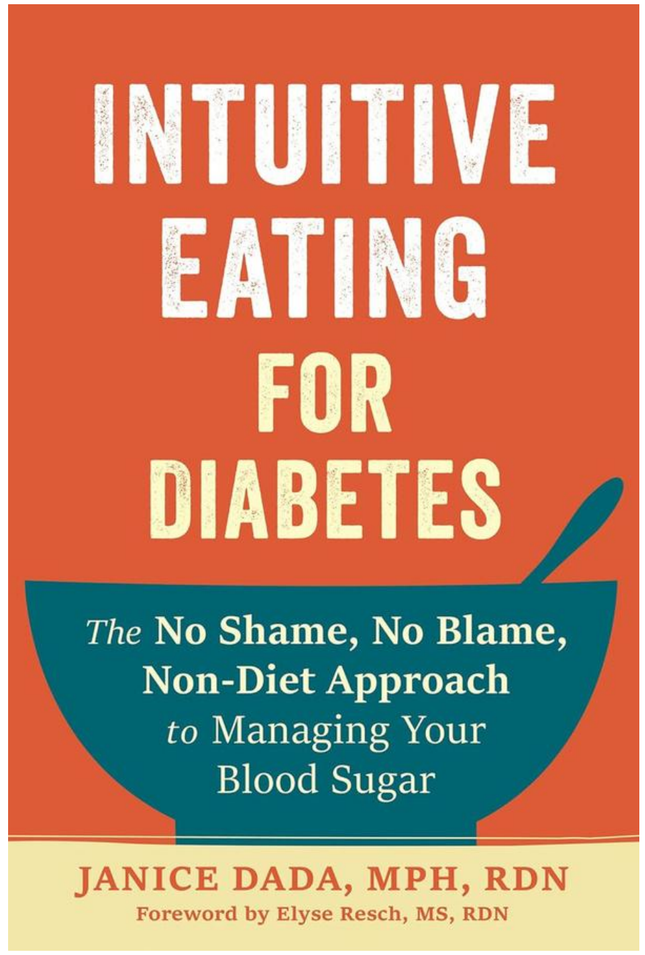
Intuitive Eating

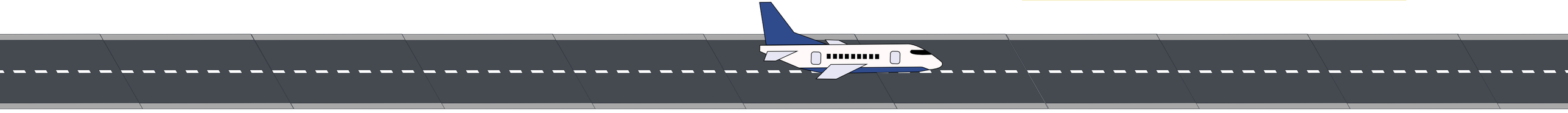
“Compassionate, self-care eating framework rooted in dignity and respect for all bodies” Tribole & Resch, (2020)

- Characteristics: Rely on hunger and fullness cues, unconditional permission to eat, body/food choice congruence

“It’s not pass or fail, it is a journey.” Tribole & Resch, (2020)

- 200+ scientific publications

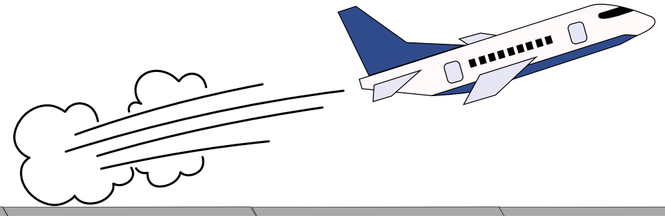




Intuitive Eating

Effect on Health

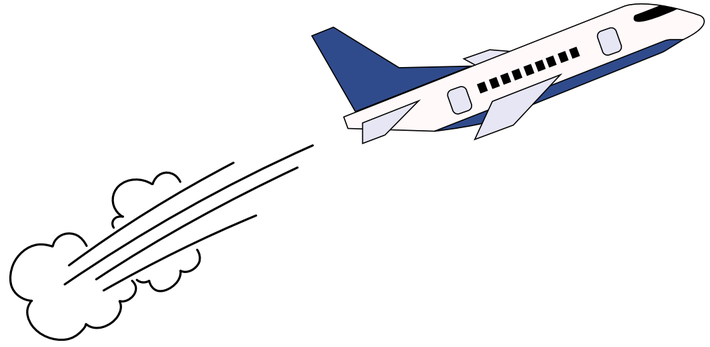
- Blood glucose (Soares et al., 2020; Wheeler et al., 2016; Willig et al., 2014; Tlka et al., 2020)
  - Higher intuitive eating scores → lower HbA1c
  - 80% lower chance of having poor glycemic control in T2DM
  - Lower FG and HbA1c @ 1 yr postpartum (Quansah et al., 2019)
  - Reduced risk of developing diabetes postpartum (Quansah et al., 2019)
- Weight stability (Tylka et al., 2019; Bacon & Aphramor, 2011)
  - Decreased weight cycling
  - Occasionally associated with weight loss



Intuitive Eating

Effect on Health

- Blood lipid levels
  - Lower triglycerides (Teas et al., 2022; Hawks et al., 2005; Koller et al., 2024)
  - Higher HDL (Teas et al., 2022; Hawks et al., 2005)
- Lower blood pressure (Hayashi et al., 2021)



- Greater food variety (Tribole & Resch, 2020)
- Decreased disordered eating (Hazzard et al., 2020)
- Less body dissatisfaction (Ricciardelli & Yager, 2016; Hazzard et al., 2020)
- Higher self-esteem (Hazzard et al., 2020)

Intuitive Eating

Reject Diet Culture

Honor Your Hunger

Make Peace with Food

Discover the Satisfaction Factor

Feel Your Fullness

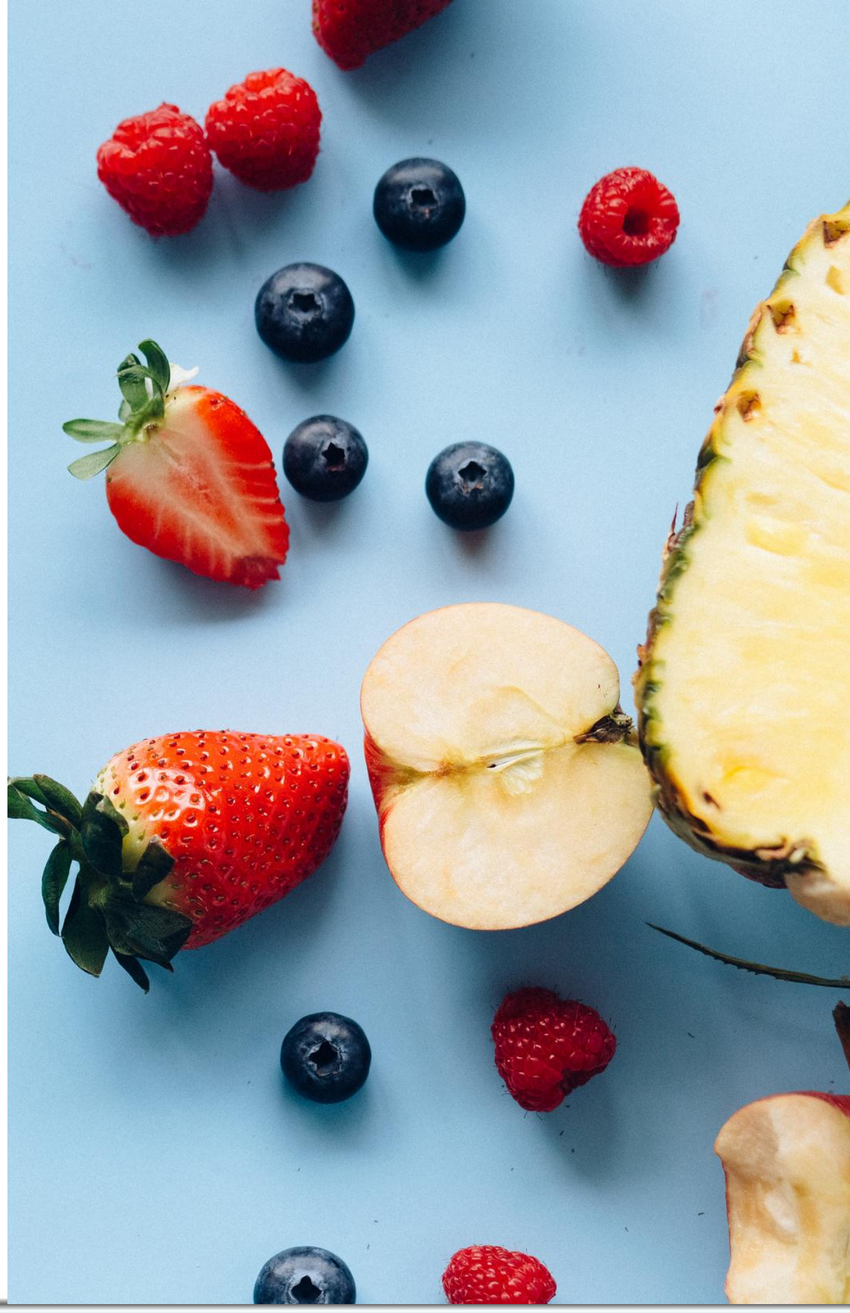
Challenging the Food Police

Cope with your Emotions with Kindness

Respect Your Body

Movement - Feel the Difference

Honor Your Health - Gentle Nutrition



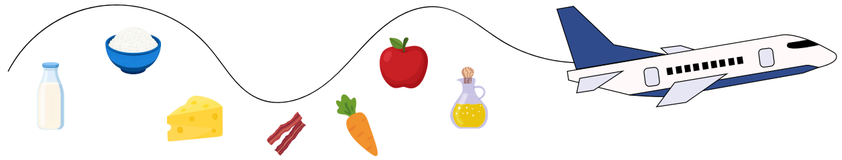
Intuitive Eating

Application:



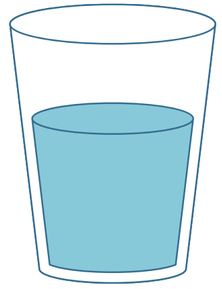
- Beliefs around being a “good patient with diabetes”
- Beliefs about carbohydrates
- Eating behaviors
- Intentional restriction vs psychological restriction
- Do we know what hunger and fullness feels like?
- Do we honor hunger and fullness cues?
- Do we gravitate towards or away from food when we experience strong emotions or stress?
- What is our relationship like with movement?

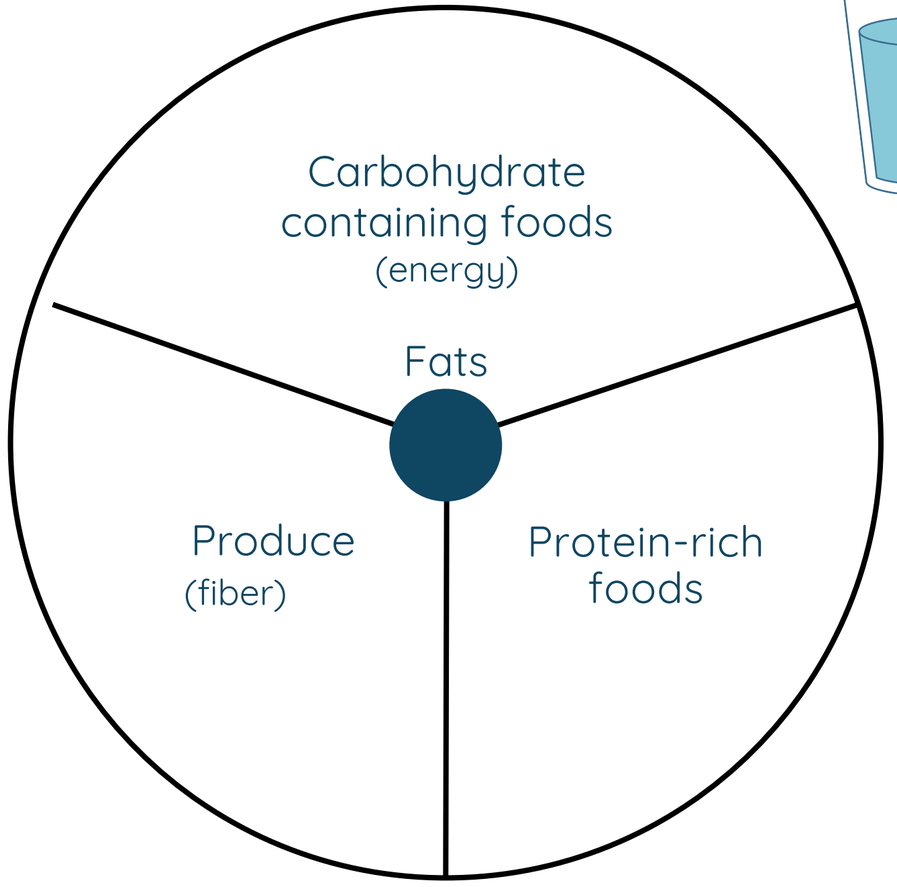
Intuitive Eating



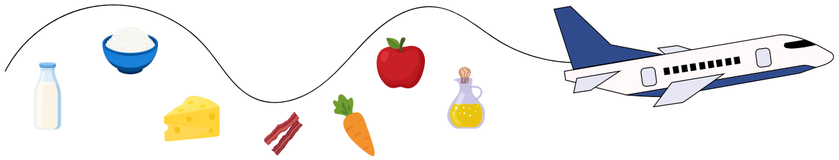
Application:

- Balanced diet with protein, carbohydrates, fruits, vegetables, and dairy
- What can we add rather than subtract?
- Avoid labeling foods
- All foods fit - at different moments





Intuitive Eating





Application:

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Intuitive Eating

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Intuitive Eating

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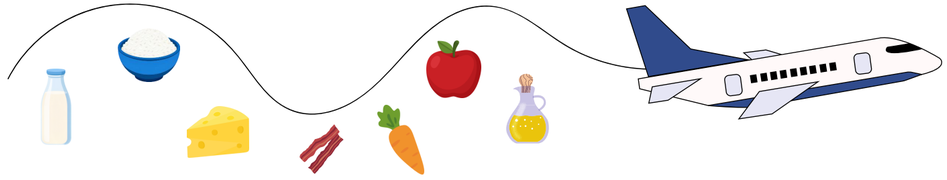
Low Carbohydrate Diets

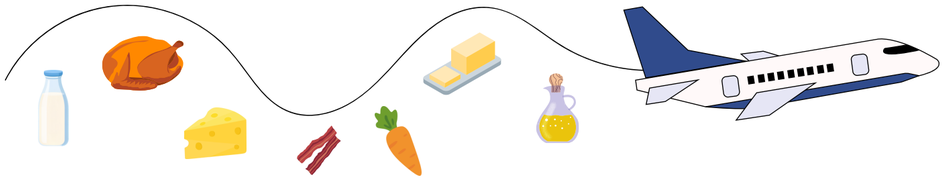
Julie Jensen, MS, RD, LN, CDCES



How would you define a low carbohydrate diet?



Low Carbohydrate Diet

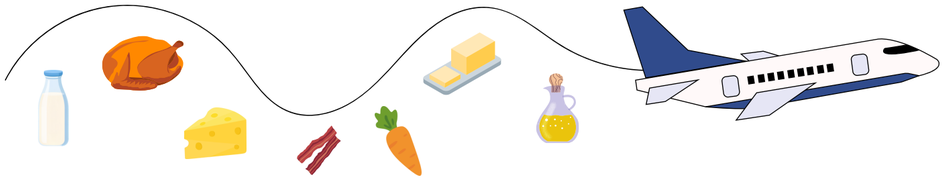


Commonly Used Targets

- Low Carbohydrate Diet (LCD)
  - Less than 25% total Kcal
  - 2000 Kcal = less than 130g CHO
- Very Low Carbohydrate Diet (VLCD)
  - Less than 10% total Kcal
  - 2000 Kcal = less than 50g CHO

5. Facilitating Positive Health Behaviors and Well Being to Improve Health Outcomes: Standards of Care in Diabetes –2026; Diabetes Care 2026; 49 (Suppl. 1) S94

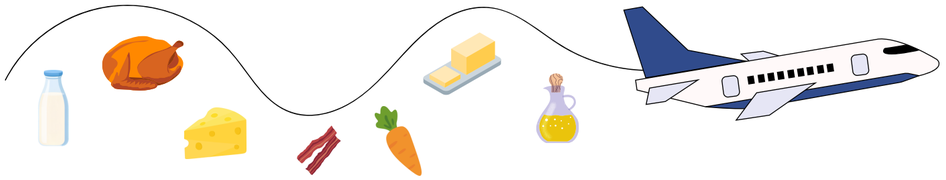
Low Carbohydrate Diet



Impact on Diabetes

- HbA1c
  - Greater Risk of hypoglycemia (Rydin, 2021)
  - Impact of Protein and Fat (Keating, 2021 & Smart, 2013)
- Lipids
  - Decrease Triglycerides
  - Increase TC, HDL and LDL – does particle size matter? (Lennertz, 2018)
- Blood Pressure
- Weight
  - Decrease (Kawashima 2024)

Low Carbohydrate Diet



Risk to children who follow a VLCD

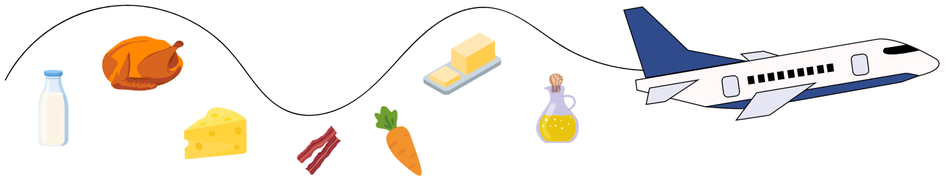
- Restricted growth
- Cardiovascular disease
- Decreased bone mineral density
- Liver and kidney disfunction
- Quality of life

Added risks for children who live with diabetes

- Euglycemic diabetic ketoacidosis
- Hypoglycemia unawareness
- Poor response to glucagon

(Ryden, 2021)

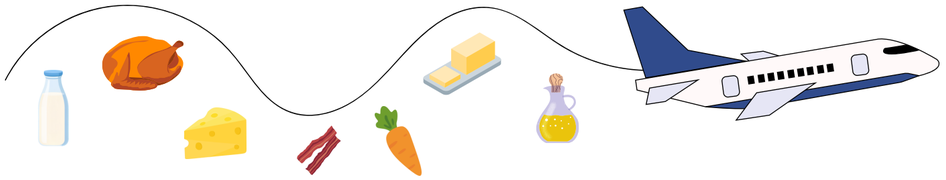
Low Carbohydrate Diet



Social Media Influencers that encourage T1D families to follow VLCD

- Let Me Be 83
- TypeOneGrit
- Dr. Richard Bernstein
  - Dr. Bernstein’s Diabetes Solution Book
  - Dr. Bernstien’s Diabetes University YouTube Videos

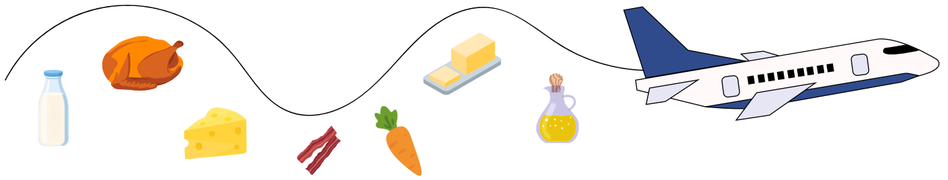
Low Carbohydrate Diet



Dr. Bernstien's Diabetes Solution

- Blood sugar should be the same after eating a meal as before.
- Consume 50g slow acting CHO, spread throughout the day:
  - 6g CHO Breakfast, 12g CHO Lunch, 12g CHO Supper
  - Indigestible fiber mostly from non-starchy vegetables
  - All starches and sugars breakdown too quickly to beincluded in this meal plan
- Simple Sugars vs Complex Carbohydrates is a "meaningless distinction, if not a foolish one"

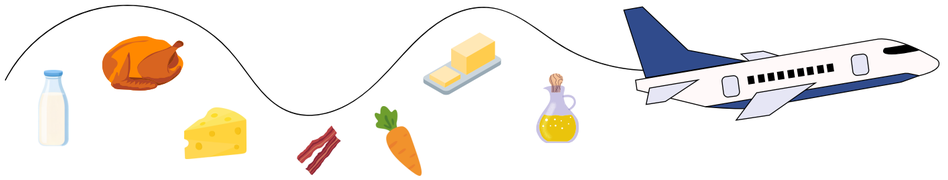
Low Carbohydrate Diet



Dr. Bernstien's Diabetes Solution (continued)

- Dr. Bernstein states that carbohydrates are not essential for normal development.
  - All needs can be met through gluconeogenesis
- Fat and Protein are essential and must be consumed through food.
- Eat enough Protein to keep you full.
  - 30g per meal is enough to meet protein needs
  - Excess will be slowly converted to glucose in 3-4 hours

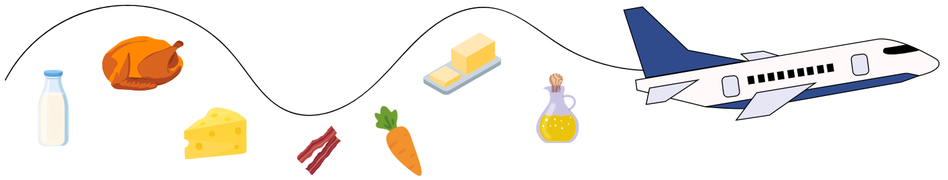
Low Carbohydrate Diet



Dr. Bernstien's Diabetes Solution (continued)

- Keep protein portions consistent from one day tothe next
- No guidelines for Fat other than it is essential to eat
  - Varying fat content impacts insulin needs
- Timing of Meals and Snacks
  - Eat on a Regular Schedule
  - Spread eating occasions out by at least 4 hours (5 hours is ideal if you inject insulin)
  - Snacks are optional, but should be limited to 6g CHO

Low Carbohydrate Diet

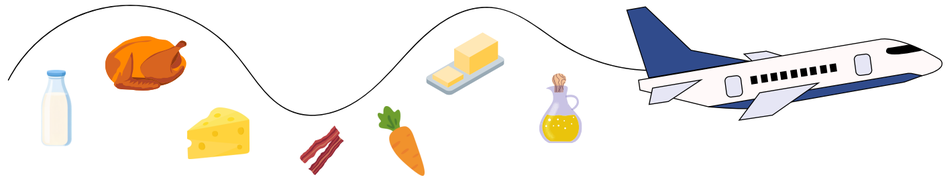


Families most likely to try VLCD

- Highly educated
- Hands on/engaged parents
- Desire for tight control
- Family is active on social media
- Family has the means to implement
- Child is an endurance athlete
- Expressing concerns about taking so much insulin

(Ryden, 2021; Odeyjewska, 2025; Hancock, 2023)

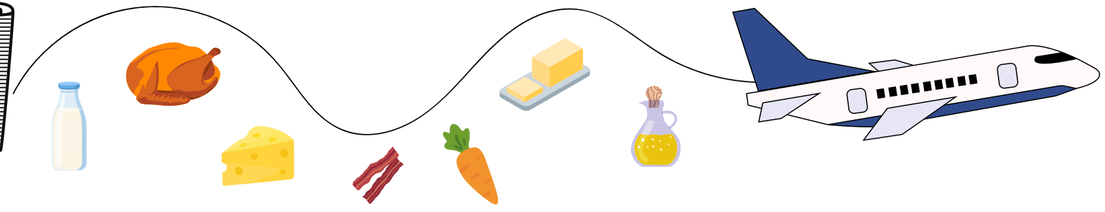
Low Carbohydrate Diet



Diabetes Educator's Role

- Ask family why they want to follow VLCD
- The following changes may provide desired results:
  - Eat three meals at regular times
  - Eat the same ratio of CHO/PRO/FAT from one day to the next
  - Focus on Low GI carbohydrates
  - Cook food from scratch more often
- If family insists on following VLCD, evaluate more frequently
  - Anthropometrics / pubertal status
  - GERD, cardiomyopathy, kidney stones
  - Psychosocial and financial barriers
  - DEXA if remain on VLCD for more than 2 years

Thank You



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Low Carbohydrate Diet

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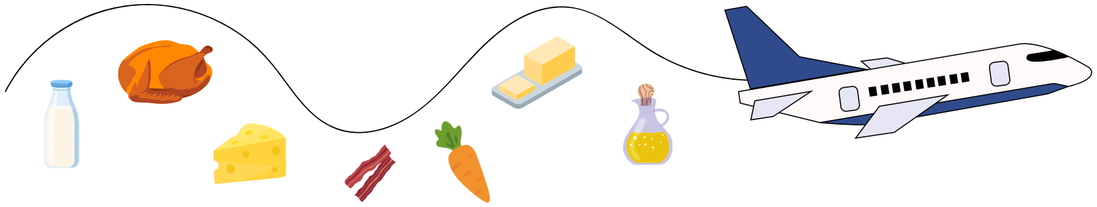
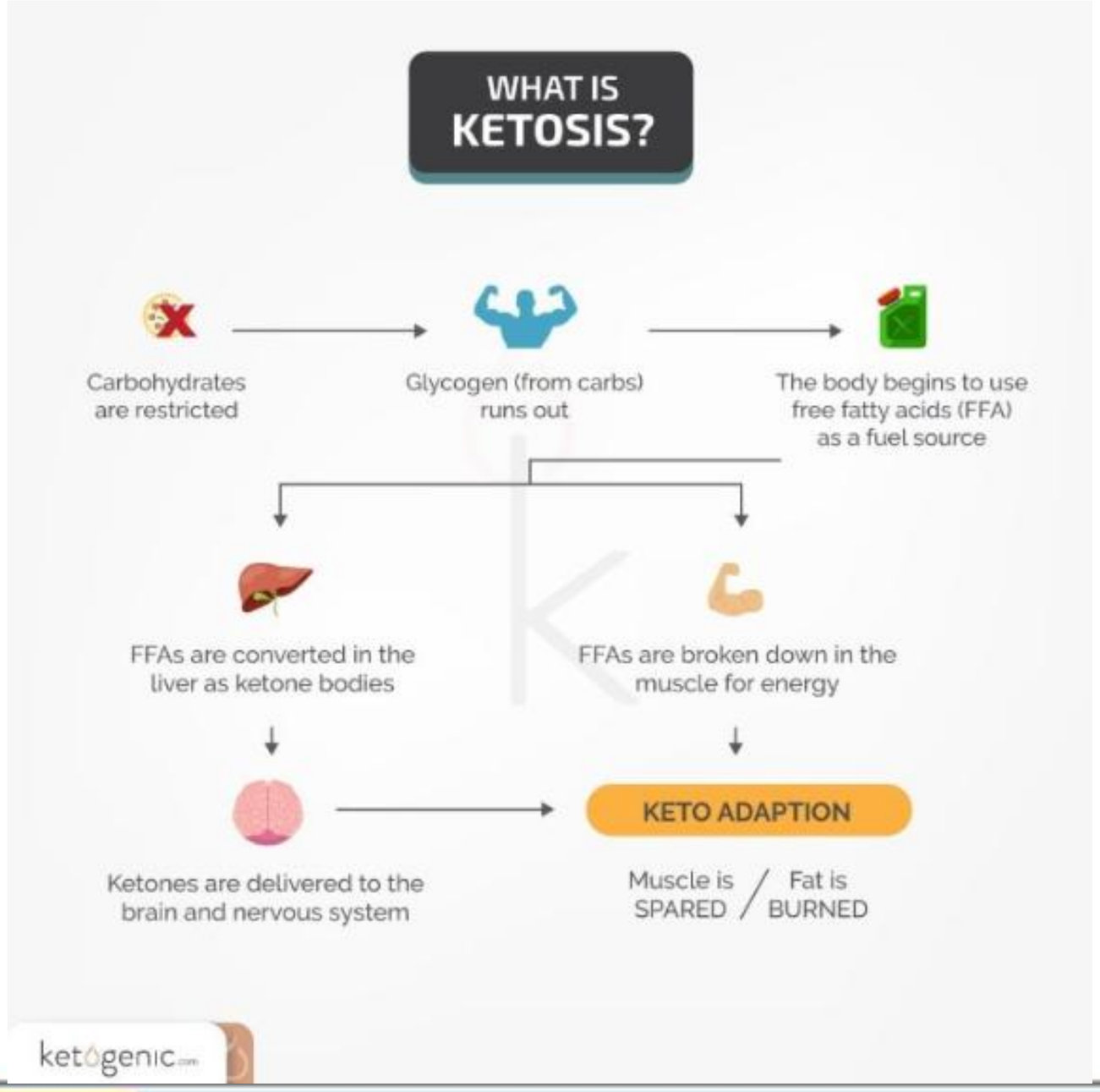
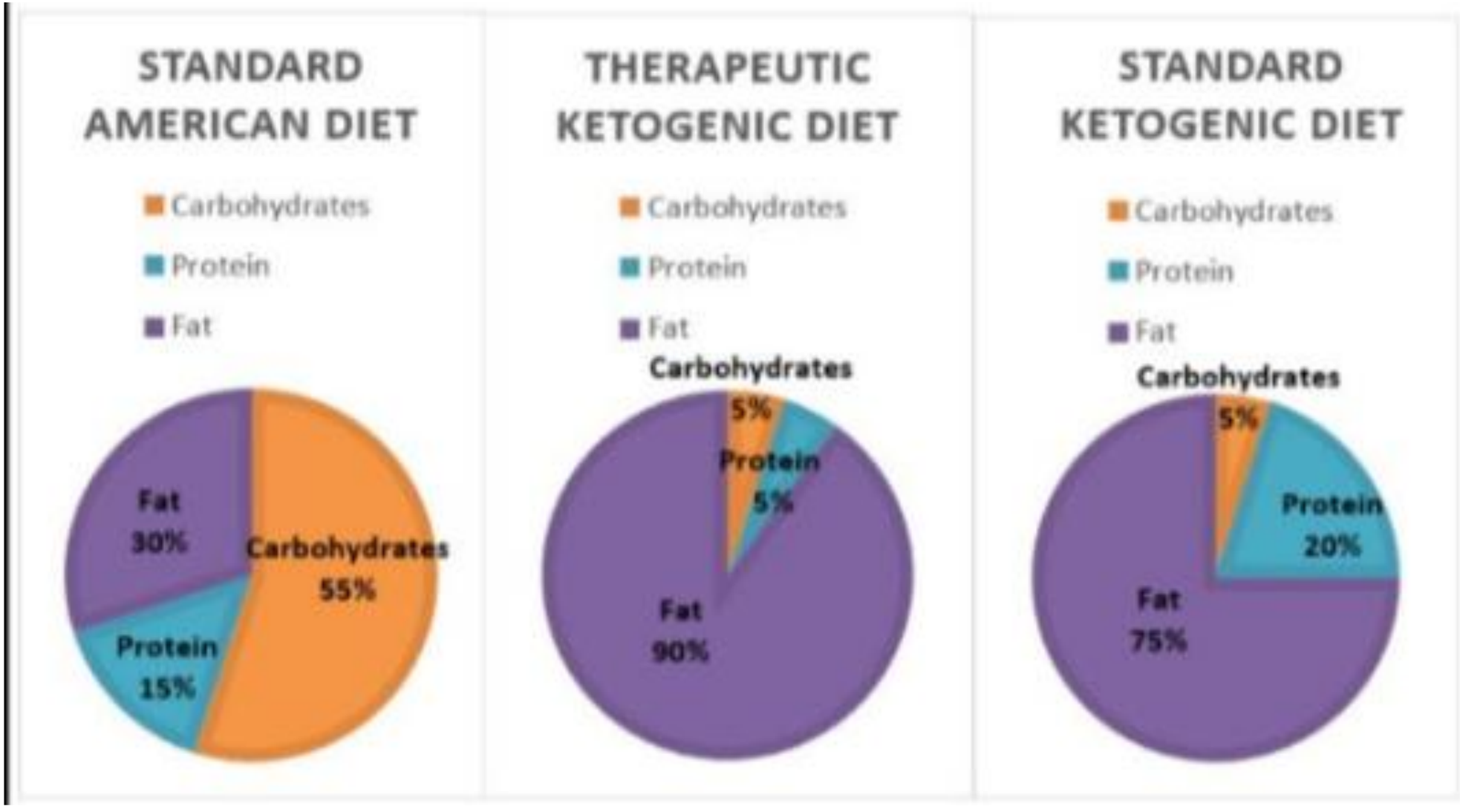


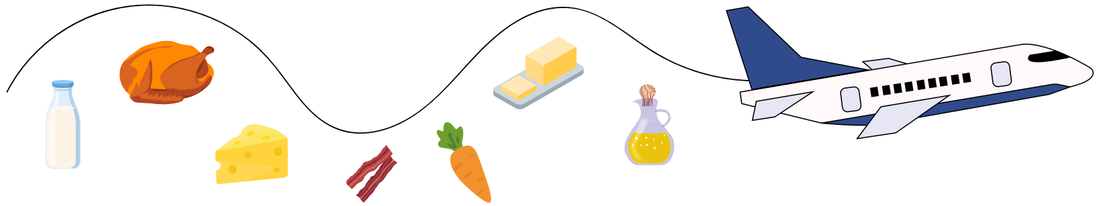
Ketogenic Diet

Helen Nichols, RD, LN,
CDCES


WHAT IS
KETOSIS?
Carbohydrates are restricted
Glycogen (from carbs) runs out
The body begins to use free fatty acids (FFA) as a fuel source
FFAs are converted in the liver as ketone bodies
FFAs are broken down in the muscle for energy
Ketones are delivered to the brain and nervous system
KETO ADAPTION
Muscle is SPARED / Fat is BURNED
ketogenic.com


STANDARD AMERICAN DIET
Carbohydrates
Protein
Fat
Fat 30%
Carbohydrates 55%
Protein 15%
THERAPEUTIC KETOGENIC DIET
Carbohydrates
Protein
Fat
Carbohydrates 5%
Protein 5%
Fat 90%
STANDARD KETOGENIC DIET
Carbohydrates
Protein
Fat
Carbohydrates 5%
Protein 20%
Fat 75%

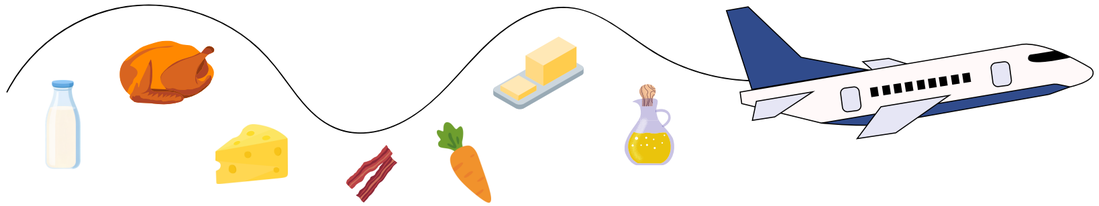
Ketogenic Diet



Calorie Goals

- Therapeutic Ketogenic Diet
- Calculate Total Calorie Needs
- Subtract 300-500
- 5% carbohydrate
- 5% protein
- 90% fat
- Ex: 1600 calories 5% 20 grams carbohydrate, 20 grams protein, 160 grams fat

Ketogenic Diet



Calculate Caloric Needs

- Standard Ketogenic Diet
- 5% Carbohydrate
- 20% Protein
- 75% Fat

- Ex. 1600 calories, 20 grams carbohydrate,
- 80 grams protein, 133 grams fat



Protein

Protein Foods



- Protein foods do not raise blood glucose significantly
- Try to choose lean proteins and bake, grill, or broil them
- Each serving size of protein foods listed below = 0 grams of carbs
- A portion on your plate may be 3 oz of cooked meat or 3 servings
- Your number of servings per day will depend on your eating plan

Meat		SERVING SIZE
Beef	Lean—Ground round, roast, round, sirloin, steak, tenderloin	1 oz
	Medium-fat—Corned beef, ground beef, prime rib, short ribs	1 oz
Chicken	Lean—Without skin	1 oz
	Medium-fat—With skin	1 oz
Fish	Lean—Smoked: herring or salmon (lox)	1 oz
	Medium-fat: Any fried product	1 oz
Lamb	Lean—Chop, leg, or roast	1 oz
	Medium-fat—Ground, rib roast	1 oz
Pork	Lean—Canadian bacon, rib or loin chop/roast, ham, tenderloin	1 oz
	Medium-fat—Cutlet, shoulder roast	1 oz
	High-fat—Ground, sausage, spareribs	1 oz
Sandwich meats	Lean—Chipped beef, deli thin-sliced meats, turkey ham	1 oz
	High-fat—Bologna, pastrami, hard salami	1 oz
Sausage	Medium-fat—With 4–7 grams of fat per oz	1 oz
	High-fat—Bratwurst, chorizo, Italian, knockwurst, Polish, smoked	1 oz
Shellfish	Lean—Clams, crab, imitation shellfish, lobster, scallops, shrimp	1 oz
Veal	Lean—Loin chop, roast	1 oz
	Medium-fat—Cutlet (no breading)	1 oz

	Protein	Fat
Lean meat	7 g	0–3 g
Medium-fat meat	7 g	4–7 g
High-fat meat	7 g	8+ g

Meat Substitutes	SERVING SIZE
Beef jerky (lean)	½ oz
Cheese	
Lean—Cottage cheese	¼ cup
Medium-fat—Feta, mozzarella, reduced-fat cheeses, string	1 oz
High-fat—American, bleu, brie, cheddar, queso, and Swiss	1 oz
Egg (medium-fat)	1
Egg substitutes, plain (lean)	¼ cup
Egg whites (lean)	2
Hot dog	
Lean—3 grams of fat or less per oz	1
High-fat—Beef or pork	1
Sardines, canned (lean)	2 small
Tofu	½ cup

Fat



Fats

- Do not raise blood glucose significantly
- Use sparingly and limit saturated fat
- Will help slow the rise of blood glucose after meals
- Each serving size of fats listed below = 5 grams of fat

Unsaturated Fats (Monounsaturated)	SERVING SIZE
Avocado	2 Tbsp
Nut butters (*trans* fat-free)	1½ tsp
Nuts	
Almonds	6
Cashews	6
Peanuts	10
Pecans	4 halves
Pistachios	16
Oil: canola, olive, peanut	1 tsp
Olives, Black	8 large
Olives, Green, stuffed	10 large

Polyunsaturated Fats	SERVING SIZE
Margarine	
Lower fat spread (30%–50% vegetable oil, *trans* fat-free)	1 Tbsp
Stick, tub (*trans* fat-free), or squeeze (*trans* fat-free)	1 tsp
Mayonnaise	
Reduced-fat	1 Tbsp
Regular	1 tsp
Oil: corn, cottonseed, flaxseed, grape seed, safflower, soybean, sunflower	1 tsp
Salad dressing	
Reduced-fat	2 Tbsp
Regular	1 Tbsp
Seeds: flaxseed (whole), pumpkin, sunflower, sesame	1 Tbsp
Walnuts	4 halves

Saturated Fats	SERVING SIZE
Bacon	1 slice
Butter	
Reduced-fat	1 Tbsp
Stick	1 tsp
Whipped	2 tsp
Cream	
Half and half	2 Tbsp
Heavy	1 Tbsp
Light	1½ Tbsp
Whipped, pressurized	¼ cup
Cream cheese	
Reduced-fat	1½ Tbsp
Regular	1 Tbsp
Lard	1 tsp
Oil: coconut, palm, palm kernel	1 tsp
Shortening, solid	1 tsp
Sour cream	
Reduced-fat or light	3 Tbsp
Regular	2 Tbsp

Vegetables

- Limited to < 20 grams carbohydrate / day

Nonstarchy Vegetables

- Do not raise blood glucose very much
- High in vitamins, minerals, and fiber, making them an important part of any healthy eating plan
- 1 cup raw or ½ cup cooked = 5 grams of carbohydrates

Artichoke hearts	Mixed vegetables (without corn, peas, or pasta)
Asparagus	Mushrooms, all kinds, fresh
Baby corn	Okra
Bamboo shoots	Onions
Bean sprouts	Pea pods
Beans (green, wax, Italian)	Peppers (all varieties)
Broccoli	Radishes
Brussels sprouts	Salad greens (lettuce, arugula, endive)
Cabbage (green, bok choy, Chinese)	Sauerkraut
Carrots	Soybean sprouts
Cauliflower	Spinach
Celery	Squash (summer, crookneck, zucchini)
Cucumber	Tomato
Eggplant	Turnips
Green onions or scallions	Water chestnuts
Leafy greens (collard, kale, mustard, turnip)	
Leeks	











Ketogenic Diet

How Do I Know I am in Ketosis?



- Urine
  - acetoacetate

Ketogenic Diet

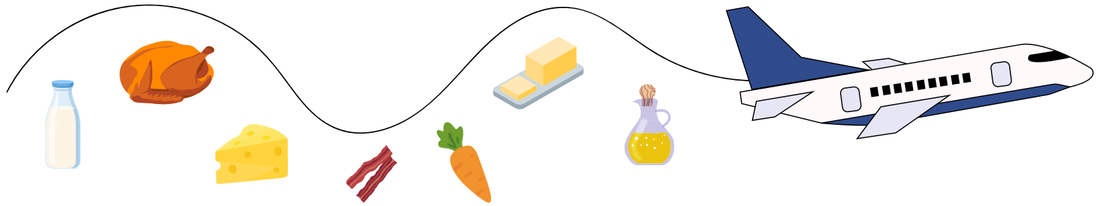
How Do I Know I am in Ketosis?



- Blood
  - Betahydroxybutyrate


0.07
SEE IT. KNOW IT.
STAY IN KETOSIS.
Clear digital display with color-coded indicators for fast and easy results.
Green Light for Successful Ketosis Reading
You're in ketosis.
Red Light for Unsuccessful Ketosis Reading
Ketosis not detected.
Amber Light for Low Battery Power
Please replace the batteries.
SMART COLOR INDICATORS
0.07
Green Light
for Successful Ketosis Reading
You're in ketosis.
1.35
Red Light
for Unsuccessful Ketosis Reading
Ketosis not detected.
Lo
Amber Light
for Low Battery Power
Please replace the batteries.

Ketogenic Diet



Impact of Ketogenic Diet

Increases

- Cholesterol
- LDL
- HDL

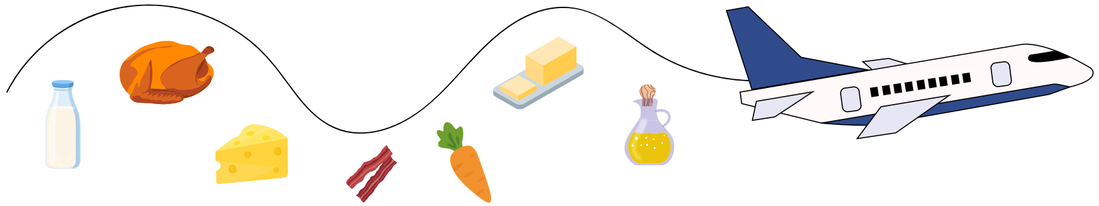
Lowers

- Triglycerides
- Blood glucose
- Diastolic Blood Pressure
- Weight
- BMI

- American JCN



Ketogenic Diet



Impact of Ketogenic Diet

- **Short-term adherence**
  can cause mild side effects such as constipation, headaches, irritability, poor mood, and hunger

- **Long-term adherence**

KD is associated with

- ↑ Circulating uric acid
- ↑ Risk of kidney stones
- ↑ Osteoporosis as a result of insufficient calcium ingestion

- **Cureus**

Keto Party Plate



Keto Thanksgiving



Ketogenic Diet

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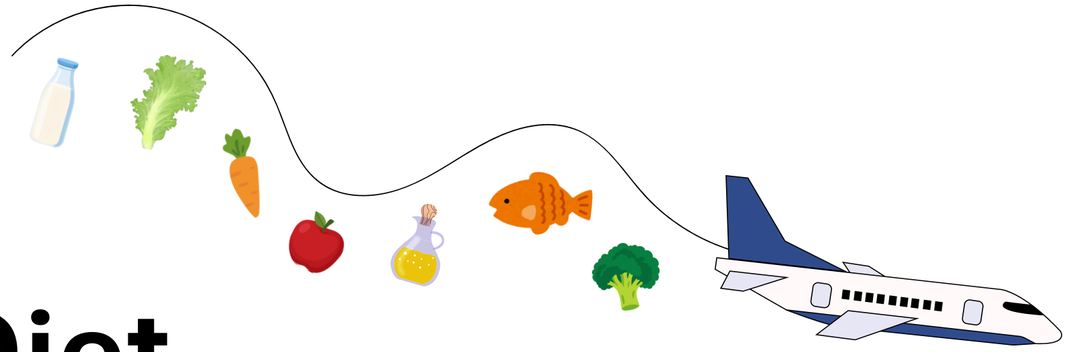


Mediterranean Diet

Mikala Henzlik, MS RD LN

What is the Med Diet?





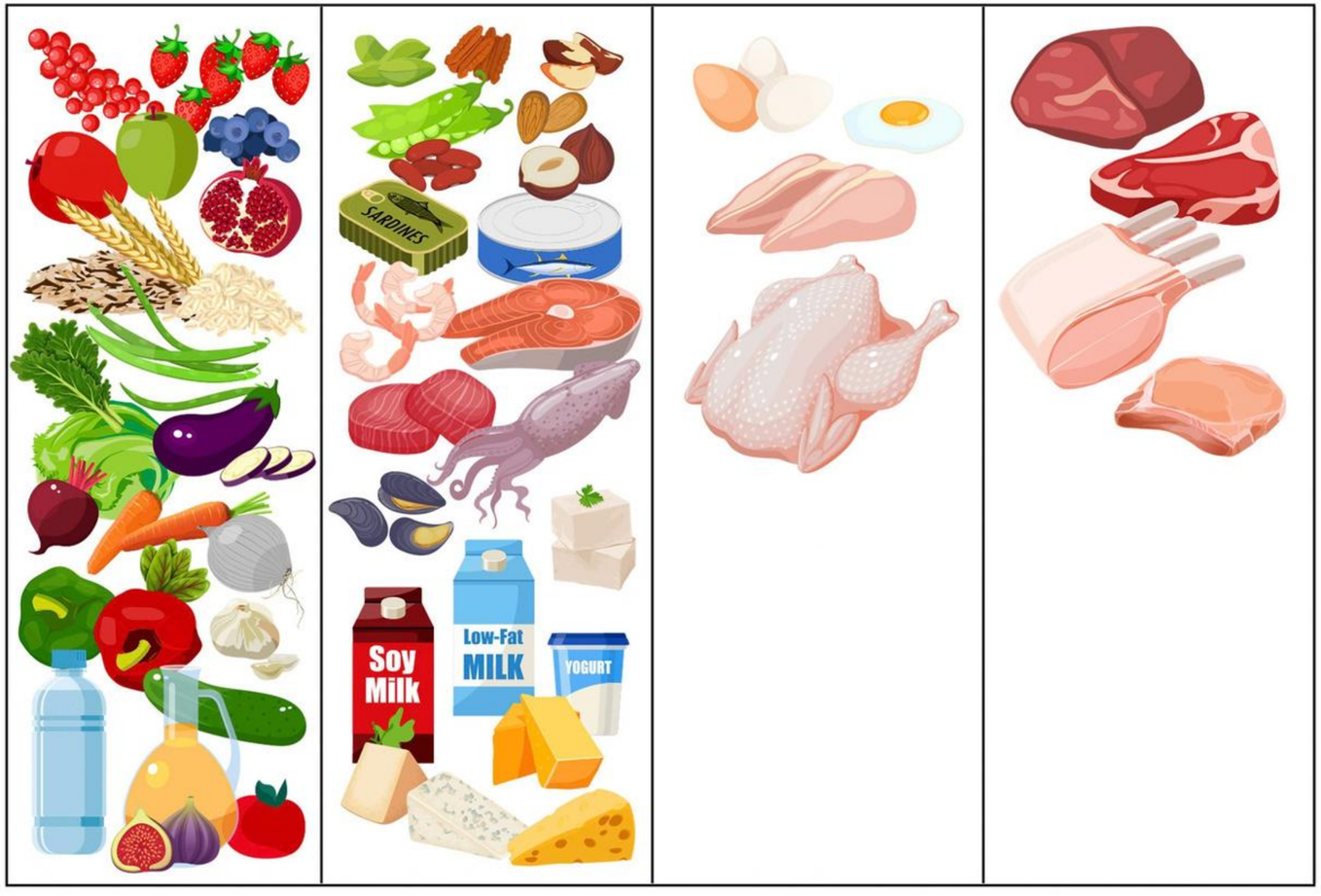








Mediterranean diet pattern



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Med Diet and Disease Prevention

Preventing CVD

- PREDIMED study
- **~30%** risk reduction
  - (Ros 2014)

Preventing type 2 diabetes

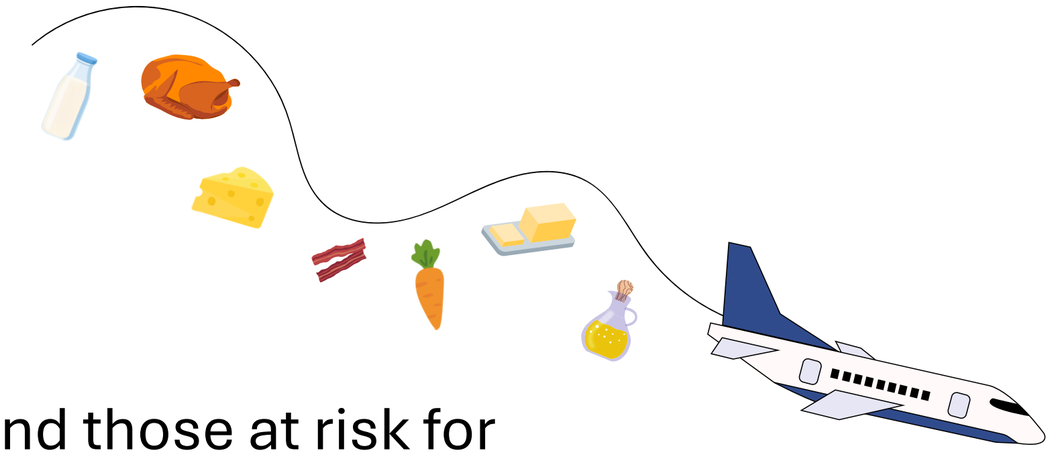
- **~20%** risk reduction
  - (Schwingshackl 2015)
- Possibly up to 40% in some groups
  - (Ros 2014)

Med Diet and Diabetes Management

Cardiometabolic markers

- A1c
  - **0.3 to 0.5%** decrease
- LDL
  - **8 mg/dl** decrease
- Blood pressure
  - **5 mmHg** decrease systolic
  - **2 mmHg** decrease diastolic
- Weight
  - **0.3 to 2.2 kg** decrease
  - (Esposito 2015, Wu 2025)

Consensus statement

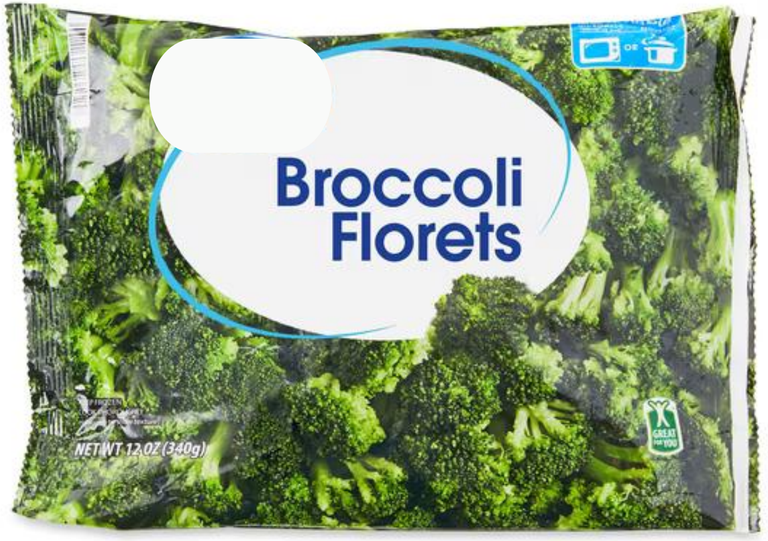


- **Standards of Care in Diabetes - 2026**
  - **5.30** Counsel people with diabetes and those at risk for diabetes to consider an eating plan emphasizing elements of a Mediterranean eating pattern, which is rich in fatty fish, nuts, and seeds, to reduce cardiovascular disease risk **A** and improve glucose metabolism. **B**
    - (American Diabetes Association 2026)

Application

- Switch to whole grains
- Increase veggie intake
- Fruit for dessert







Mediterranean Diet

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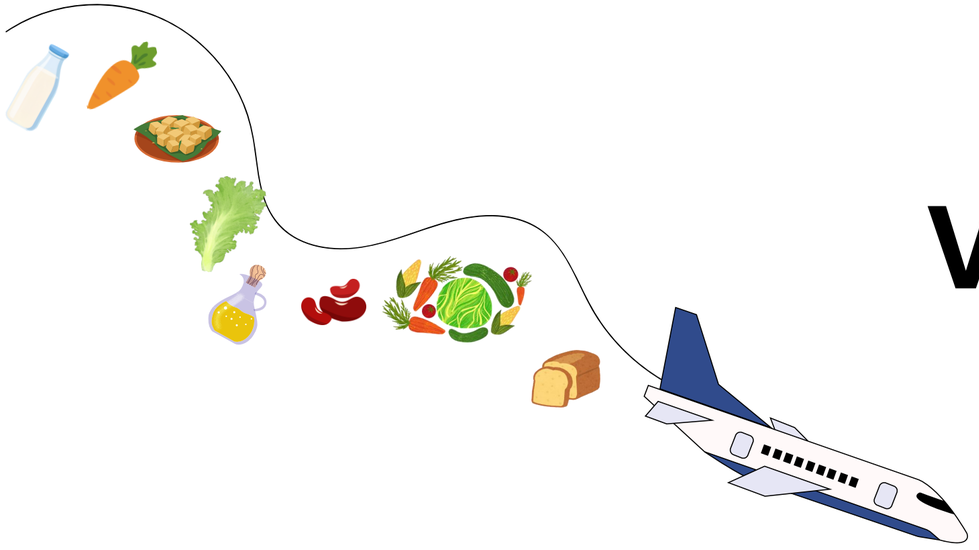

Vegetarian

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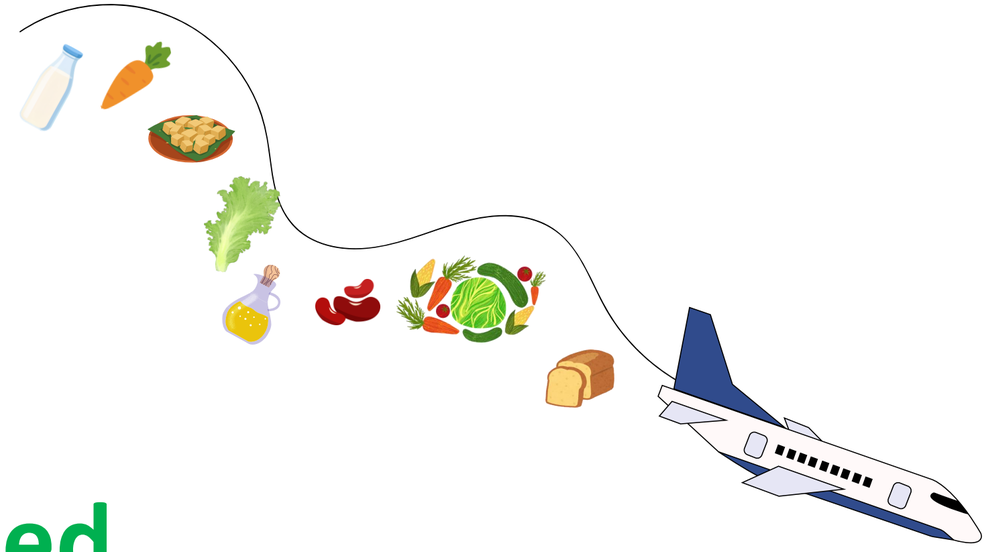
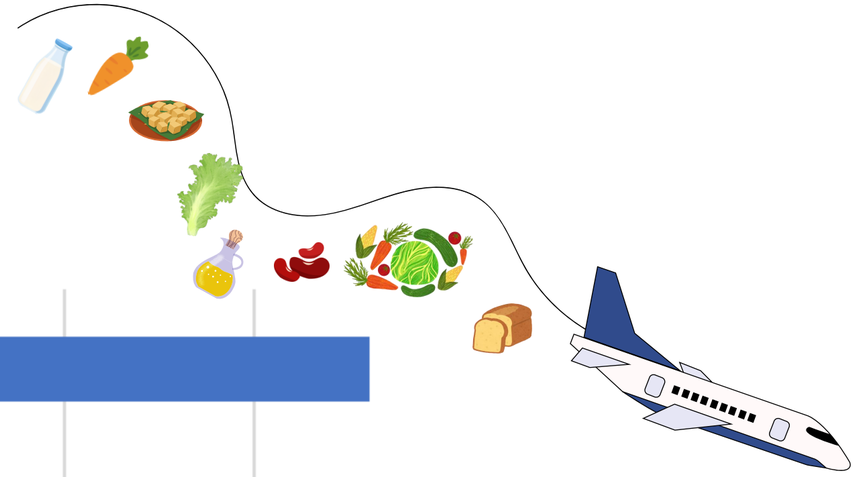
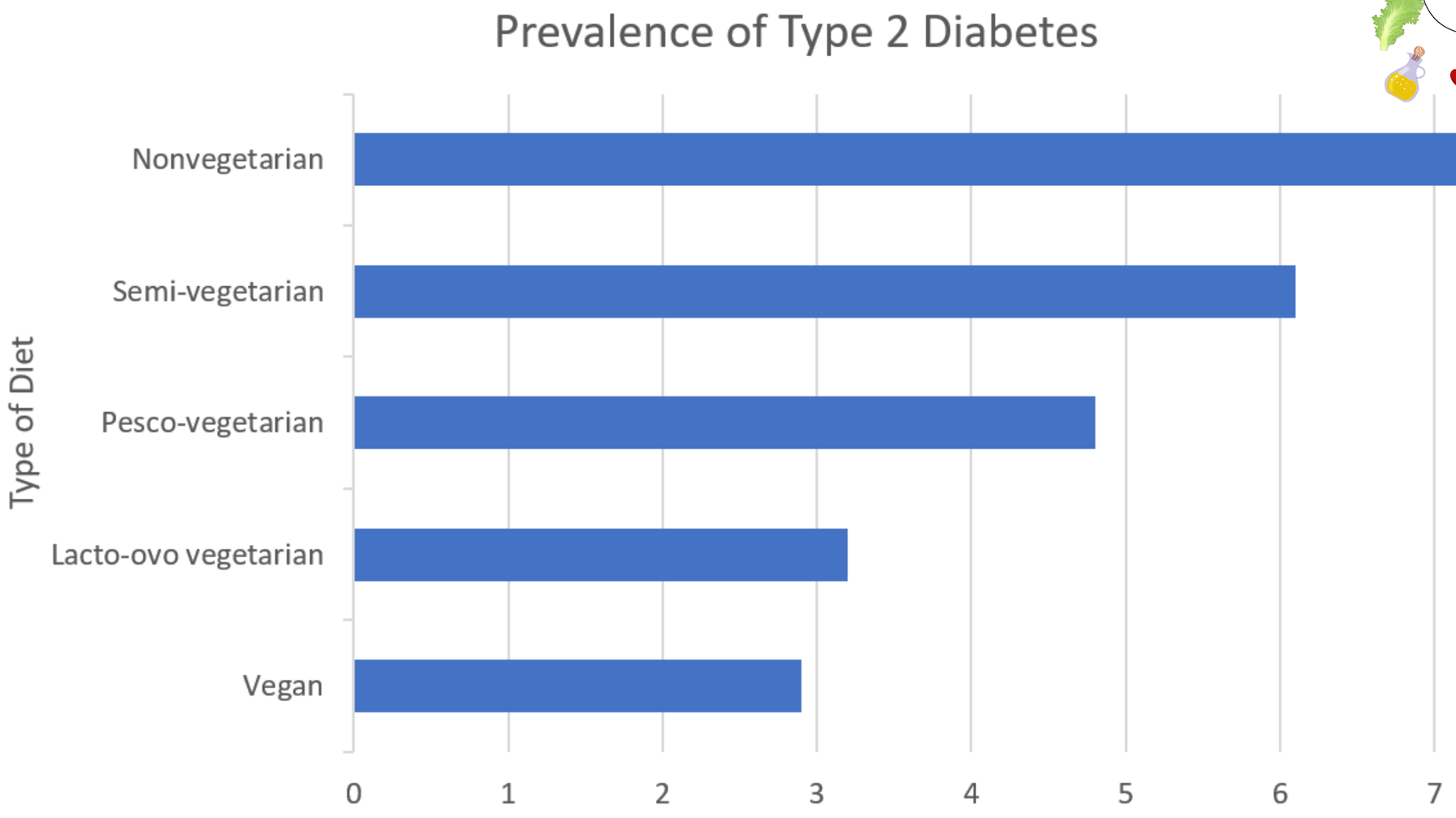
Vegetarian Diets



- Lacto-ovo-vegetarian – milk/dairy & eggs included
- Vegan – no meat or animal products at all

Adventist Health Study 2 (1)





Low fat vegan diet, T2 DM, 22 weeks
Barnard, et al , 2006 (2)

99 PWD, randomized		
	Group 1 Vegan (n=49)	Group 2 ADA Carb Counted (n=50)
Diet Rx	No Limits on portions, calories or carb Eat vegetables, fruits, whole grains, legumes/lentils, favor low GI Do not eat: animal products, added fats ~10% of energy from fat, 15% protein, and 75% carbohydrate	2003 ADA carb counted meal plan, 60-70% carb & Monounsaturated fats, < 7% Cals from Saturated fat, Protein 15-20%

Low fat vegan diet, T2 DM, 22 weeks
Barnard, et al , 2006 (2)

	Group 1 Vegan	Group 2 ADA Carb Counted
Kcals/d	↓	↓
Carb, g/d	↑ avg 205 → 251	↓avg 213 → 165
Pro, g/d	↓	↓
Fat g/d	↓ avg 58% (avg 72 → 30)	↓ avg 32% (73 → 50)

Low fat vegan diet, T2 DM, 22 weeks
Barnard, et al , 2006 (2)

	Vegan	Standard ADA
Reduce or stop DM Meds	43%	26%
Reduction in A1c (excluding those w/ med changes)	- 1.2%	-0.38%
Reduction in LDL Cholesterol (excluding those w/ med changes)	-21.2%	-9.3%
Change in body weight	-6.5kg	-3.1kg

Low fat vegan diet, T2 DM, 74 week Barnard, et al , 2009 (3)



	Vegan	Standard ADA Portion Control
Reduce or stop diabetes meds	35%	20%
Reduction in A1c (accounting for med changes)	-0.40%	+0.01
Reduction in LDL Chol, mg/dl (accounting for med changes)	-13.5	-3.4
Change in body weight – All Those w/ higher diet adherence	-4.4 kg -6.8 kg	-3.0 kg -4.9 kg

Low Fat Vegan T1 DM, Kahleova, et al 2024 (4)

	Group 1 Vegan (n=29)	Group 2 ADA Carb Counted (n=29)
Diet Rx % Cals	No Limits on portions, calories or carb Eat vegetables, fruits, whole grains, legumes/lentils, favor low GI Do not eat: animal products, added fats ~10% of energy from fat, 15% protein, and 75% carbohydrate	2003 ADA carb counted, 60-70% carb & MUFA, < 7% Cals from SF, Protein 15-20% Kcals reduced for BMI 25+

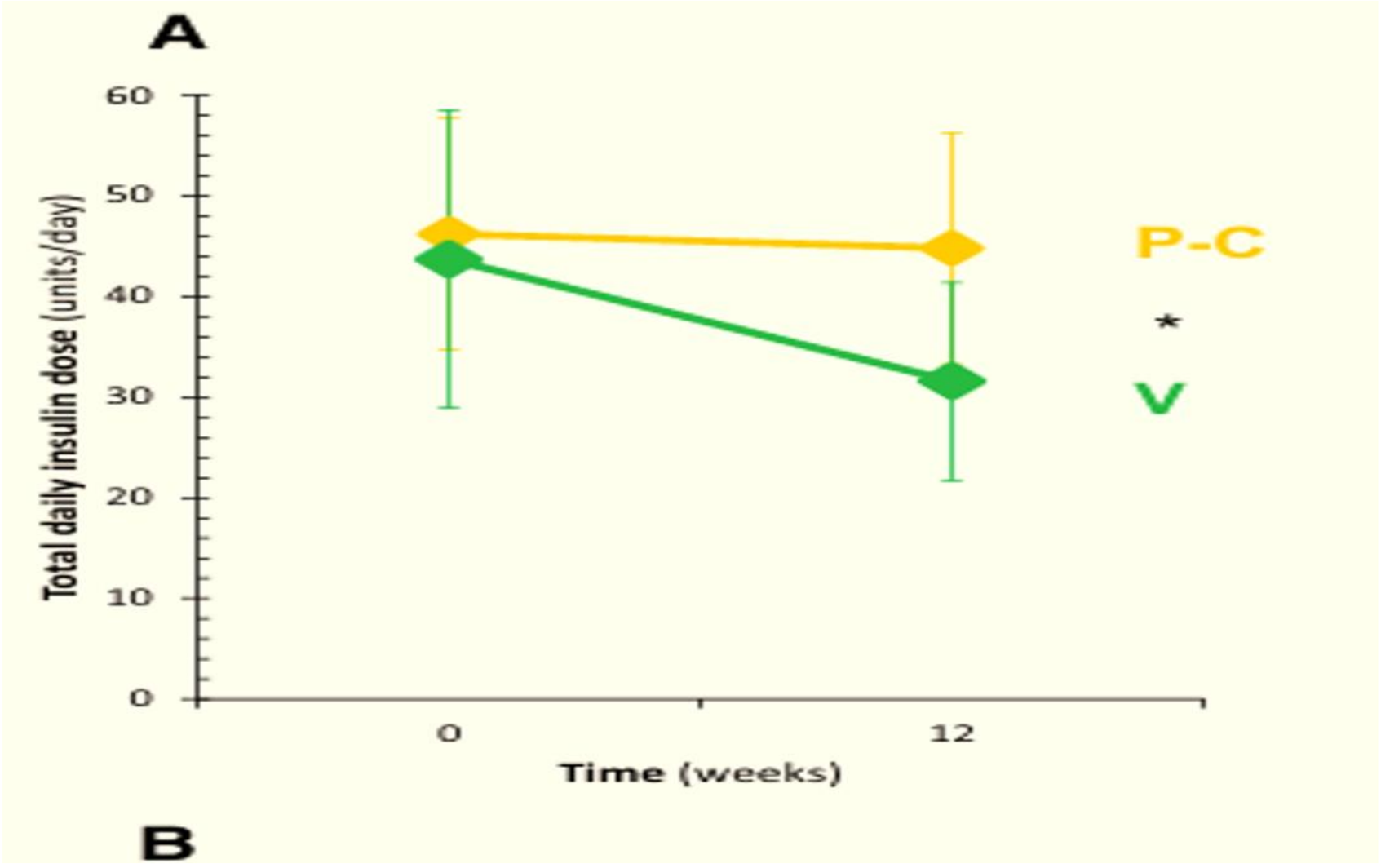
Low Fat Vegan T1 DM, Kahleova, et al 2024 (4)

	Vegan	Portion Controlled
Calories & Physical Activity	No significant change	No significant change
Carb	↑ avg 111 g/day	
Fat	↓ avg 25 g/day	
Fiber	↑ avg 19 g/day	
Weight	↓ 5.2kg	

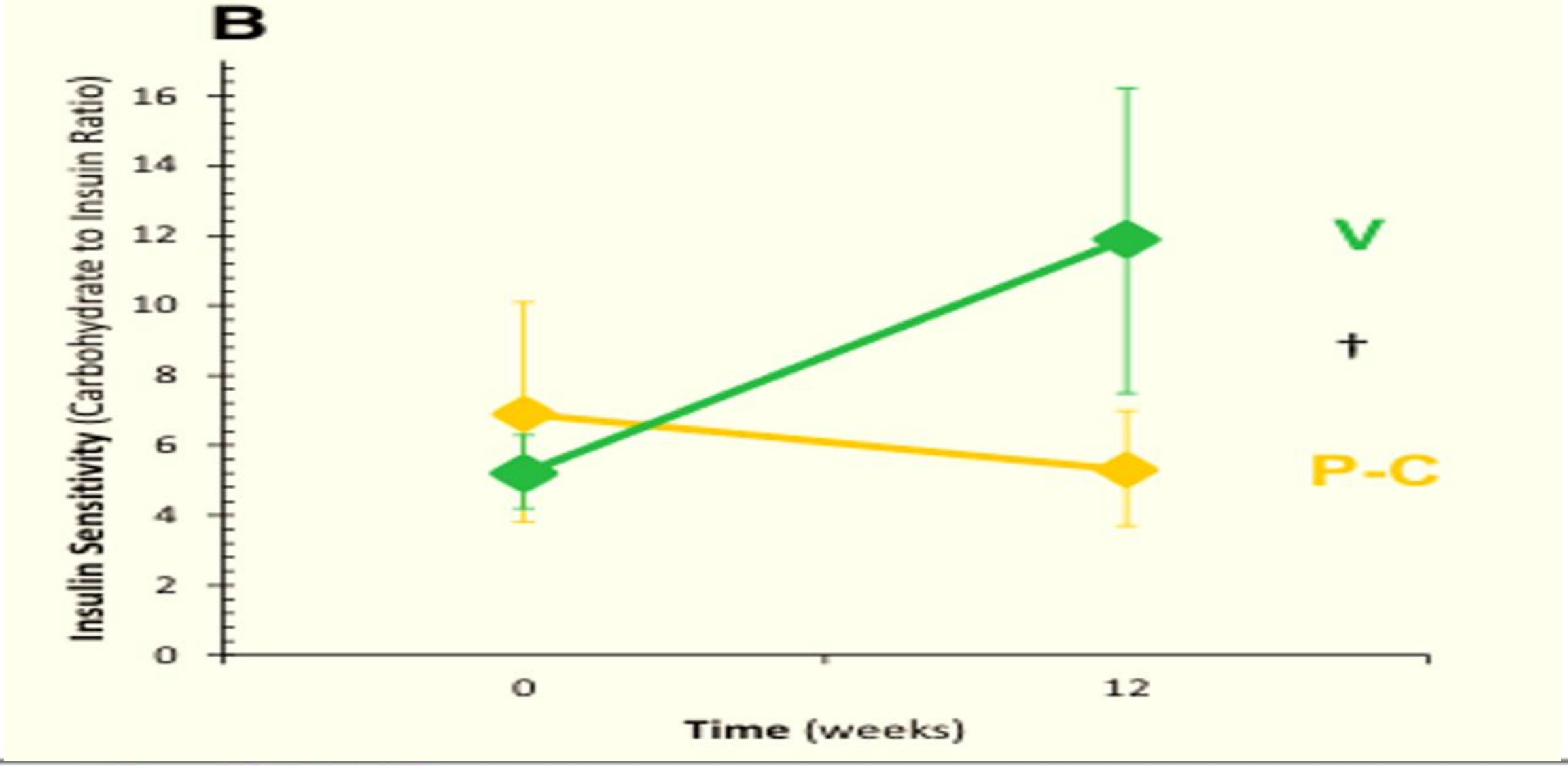
Low Fat Vegan T1 DM, Kahleova, et al 2024 (4)

	Vegan	Standard ADA
TDD of Insulin, units/day	↓12.1	No significant change
Reduction in A1c (excluding those w/ med changes)	-0.80%	-0.60%
Reduction in LDL Cholesterol, mg/dl	-18.6	No significant change
Change in body weight	-5.2kg	No significant change

Low Fat Vegan T1 DM, Kahleova, et al 2024 (4)



Low Fat Vegan T1 DM, Kahleova, et al 2024 (4)



Summary of 3 SR & Meta-analysis (5, 6, 7)

	2014	2018	2024
# Trials	6	9	7
# Participants	255	664	770
Duration in weeks	4-74	≥3	12-74

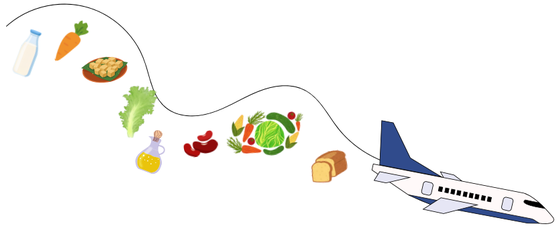
Summary of 3 SR & Meta-analysis (5, 6, 7)

	2014	2018	2024
↓HbA1c	-0.40%	-0.30%	-0.40%
↓LDL Chol	u/a	-4.6 mg/dl	No effect
↓BMI	u/a	-0.74 kg/m2	-0.96 kg/m2
↓BP	u/a	Not significant	u/a

Clinical Practice Guidelines (7)

These CPG include use of Vegetarian Eating Pattern (EP) among other EP

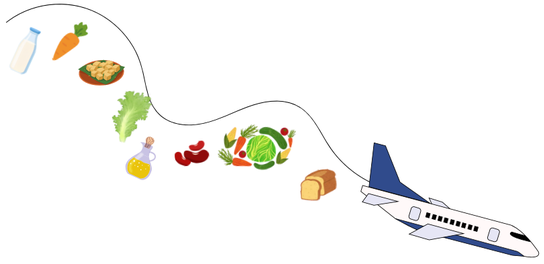
- **ADA – American Diabetes Association Standards of Care in Diabetes**
- **EASD – European Association for the Study of Diabetes**
- **Diabetes UK**
- **Diabetes Canada**



Plant Based Diets

Endorsed and recommended by (8)

- American Association of Clinical Endocrinologists
- American College of Endocrinology
- America College of Lifestyle Medicine



Potential Mechanisms why Veg EP may improve glycemia (2)

- Reduction in energy → weight loss
- Low fat/low calorie intake reduces intramyocellular lipid concentrations

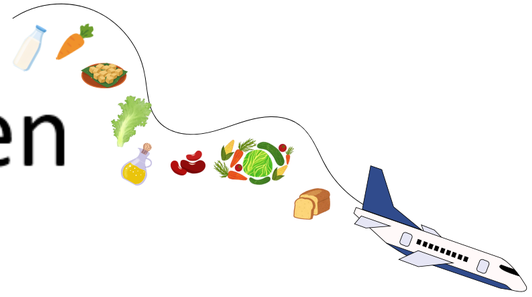


- Dietary fiber: slow glucose absorption from intestine
- Fiber: ↑ bile acid excretion → increase in GLP-1



Potential Mechanisms why Veg EP may improve glycemia

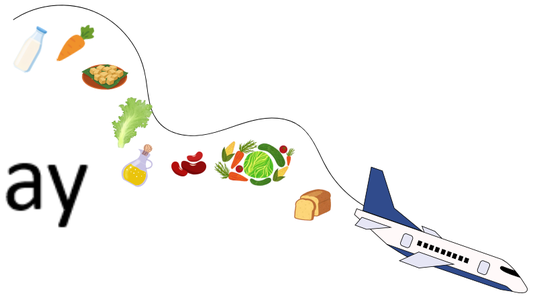
- ↓exposure to heme-iron: pro-oxidant that promotes insulin resistance (9)
- ↓ intake of saturated fat which has been associated with insulin resistance (9)
- ↑exposure to persistent organic pollutants (POPs) may disturb glucose (and lipid) metabolism; fatty animal foods are the main sources of POPs (10)





Practical Considerations

- Recommend ***plant-forward*** EP
- Support patients choosing vegetarian, vegan diet
- Monitor for need for medication adjustment
- Risk for nutrient deficiencies, example, B12, calcium, iron so refer to a registered dietitian for nutrition assessment and education
- Use of metformin in those on vegan diets may increase potential for B12 deficiency





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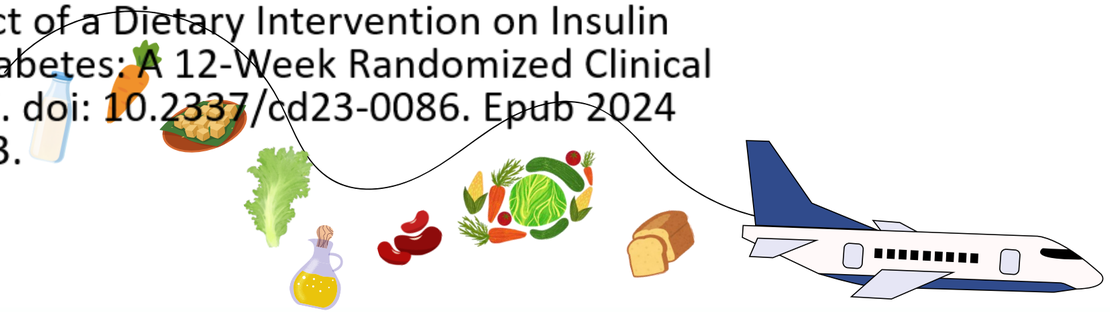

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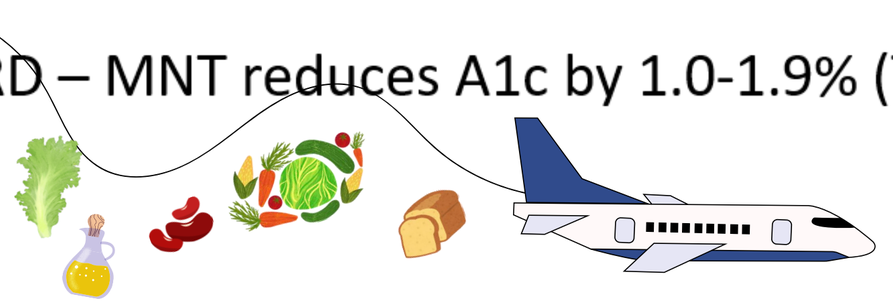
2026 ADA Standards (11)

Focus on **key factors common** among the EP

- Emphasize Non-Starchy vegetables
- Limit foods that are high in added sugars, fats & salt
- Choose whole foods over highly processed
- Choose nutrient dense, high fiber carbohydrates, lean proteins, limit saturated fats
- Reduce overall carbohydrate intake to improve glycemia
- Individualize
- Refer to see an RD – MNT reduces A1c by 1.0-1.9% (T1 DM) & 0.3-2.0% (T2 DM



Sticking the Landing

Eating Pattern	Health Outcomes			
	HbA1c	LDL	Blood Pressure	Weight
Intuitive Eating	↓	Limited information	↓	— OR ↓
Low Carbohydrate	↓	↑	Limited information	↓
Ketogenic	↓	↑	↓	↓
Mediterranean	↓	↓	↓	↓
Vegetarian	↓	↓	Limited information	↓

