

Clinical Guidelines for Therapeutic Carbohydrate Restriction

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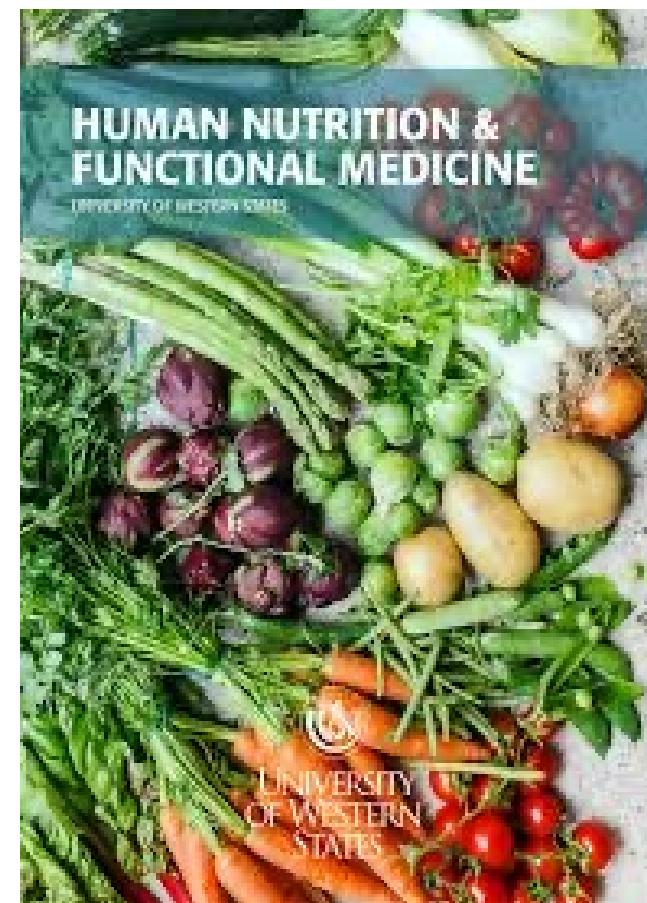
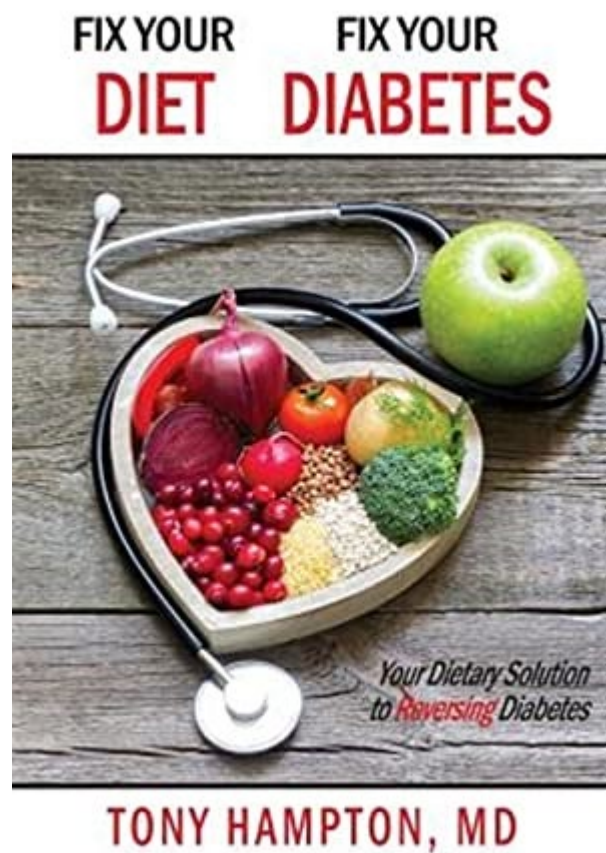
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Disclosures



Learning Objectives

- 1) Why carb restriction is safe and clinically proven to treat metabolic dysfunction (the evidence)
- 2) Why carb restriction has the potential to transform your clinical practice
- 3) The background of therapeutic carb restriction
- 4) The therapeutic potential of therapeutic carb restriction
- 5) How to initiate therapeutic carb restriction
- 6) How to adjust medications, monitor, and evaluate for follow-up

Why carb restriction is safe and clinically proven to treat metabolic dysfunction

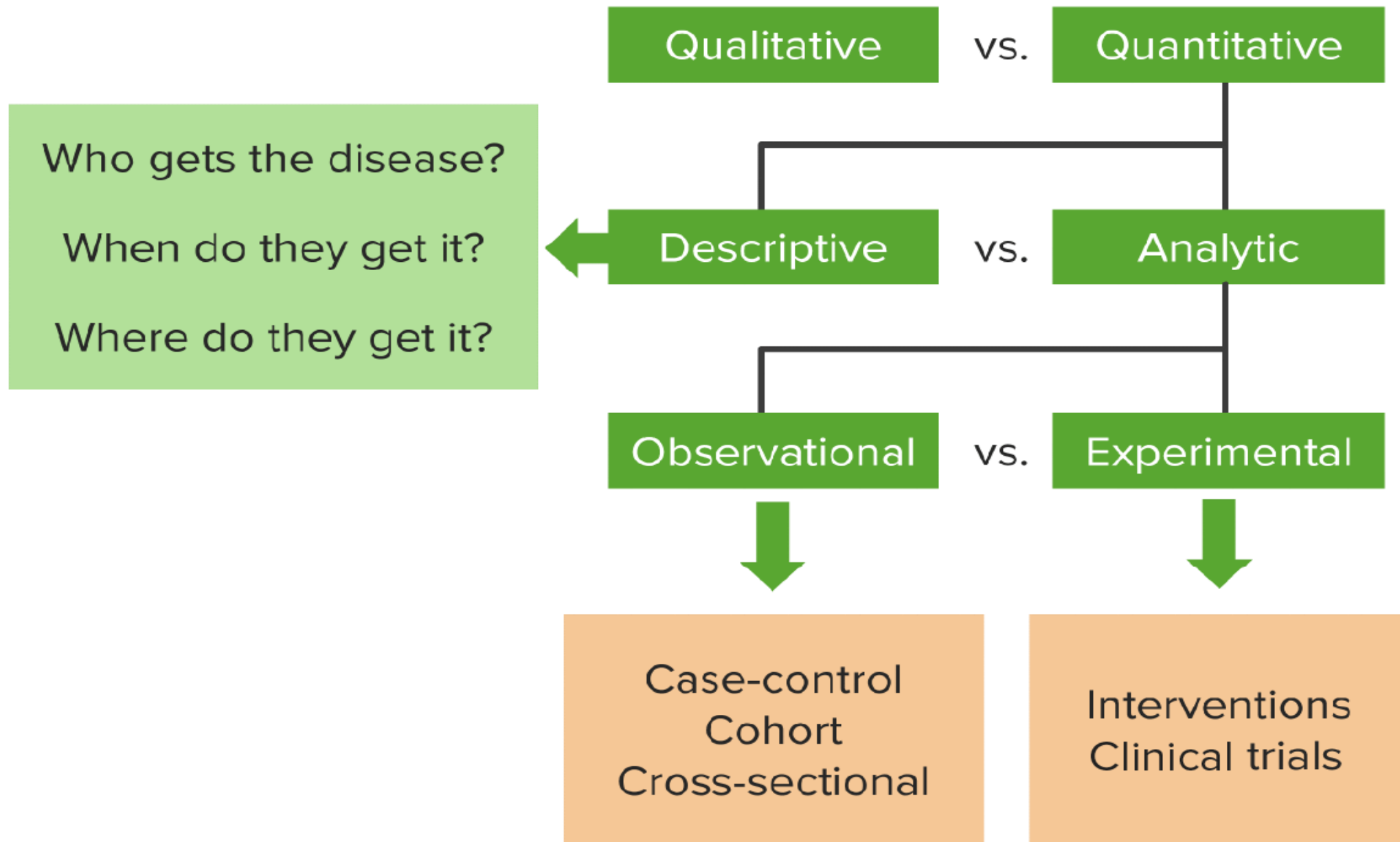
Low Fat Diet

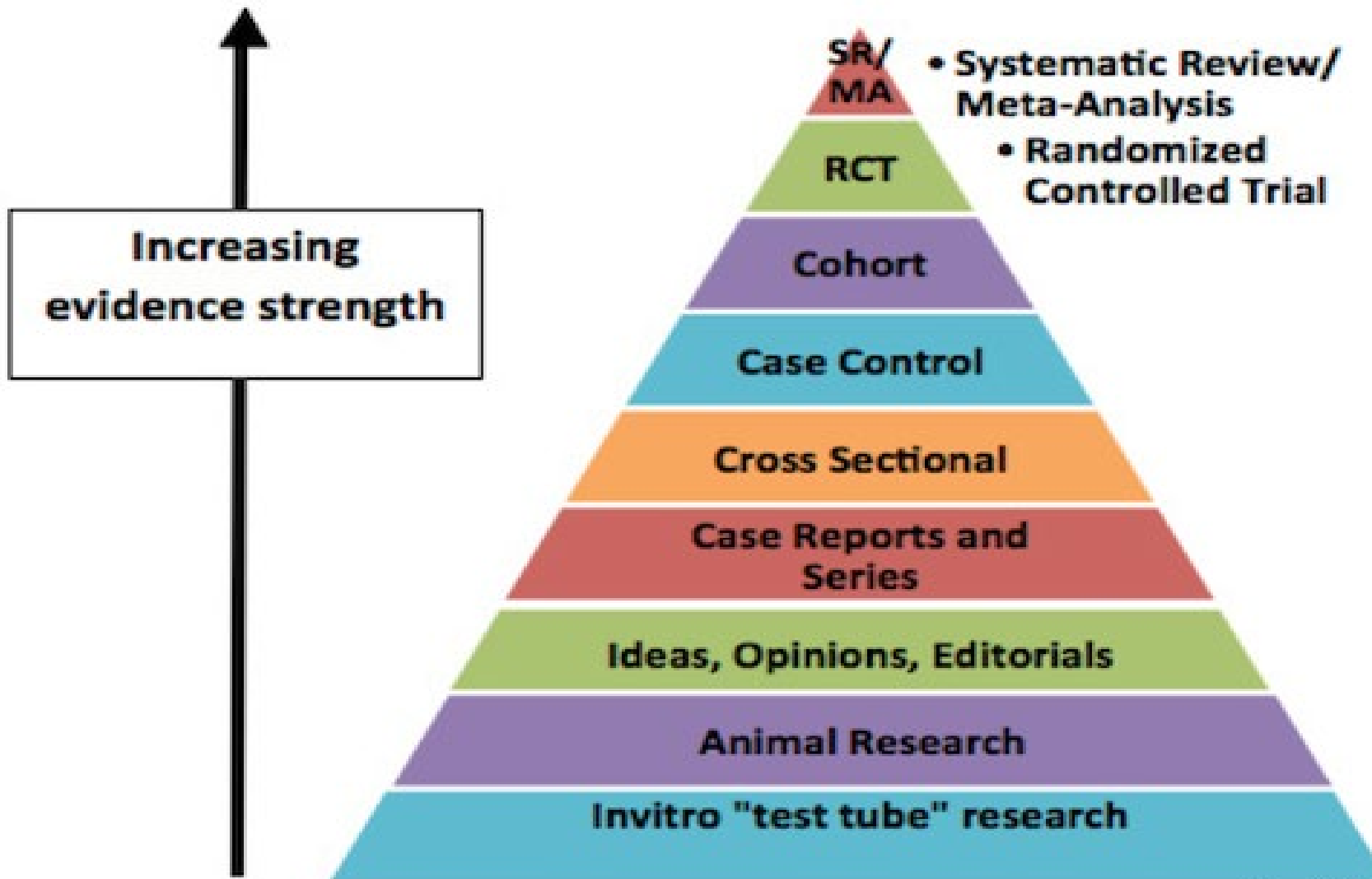


Vs

High Fat Diet







Credit: Univ of New Hampshire/
SUNY Downstate

Adaptation of the Evidence Pyramid Diagram developed by the Medical Research Library of Brooklyn, SUNY Downstate Medical Center.

ARTICLES | [VOLUME 3, ISSUE 9, E419-E428, SEPTEMBER 01, 2018](#)

Dietary carbohydrate intake and mortality: a prospective cohort study and meta-analysis

[Sara B Seidelmann, MD](#) • [Brian Claggett, PhD](#) •[Susan Cheng, MD](#) • [Mir Henglin, BA](#) • [Amil Shah, MD](#) •[Lyn M Steffen, PhD](#) • et al. [Show all authors](#)[Open Access](#) • Published: August 16, 2018 •DOI: [https://doi.org/10.1016/S2468-2667\(18\)30135-X](https://doi.org/10.1016/S2468-2667(18)30135-X) •

Methods

We studied 15 428 adults aged 45–64 years, in four US communities, who completed a dietary questionnaire at enrolment in the Atherosclerosis Risk in Communities (ARIC) study (between 1987 and 1989), and who did not report extreme caloric intake (<600 kcal or >4200 kcal per day for men and <500 kcal or >3600 kcal per day for women). The primary outcome was all-cause mortality. We investigated the association between the percentage of energy from carbohydrate intake and all-cause mortality, accounting for possible non-linear relationships in this cohort. We further examined this association, combining ARIC data with data for carbohydrate intake reported from seven multinational prospective studies in a meta-

Interpretation

Both high and low percentages of carbohydrate diets were associated with increased mortality, with minimal risk observed at 50–55% carbohydrate intake. Low carbohydrate dietary patterns favouring animal-derived protein and fat sources, from sources such as lamb, beef, pork, and chicken, were associated with higher mortality, whereas those that favoured plant-derived protein and fat intake, from sources such as vegetables, nuts, peanut butter, and whole-grain breads, were associated with lower mortality, suggesting that the source of food notably modifies the association between carbohydrate intake and mortality.



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Review

The low-carbohydrate diet and cardiovascular risk factors: evidence from epidemiologic studies

T Hu et al. Nutr Metab Cardiovasc Dis. 2014
Apr.

Conclusions: Recent randomized controlled trials document that low-carbohydrate diets not only decrease body weight but also improve cardiovascular risk factors. In light of this evidence from randomized controlled trials, dietary guidelines should be re-visited advocating a healthy low carbohydrate dietary pattern as an alternative dietary strategy for the prevention of obesity and cardiovascular disease risk factors.

Keywords: Cardiovascular disease; Low carbohydrate diet; Risk factors; Weight loss.

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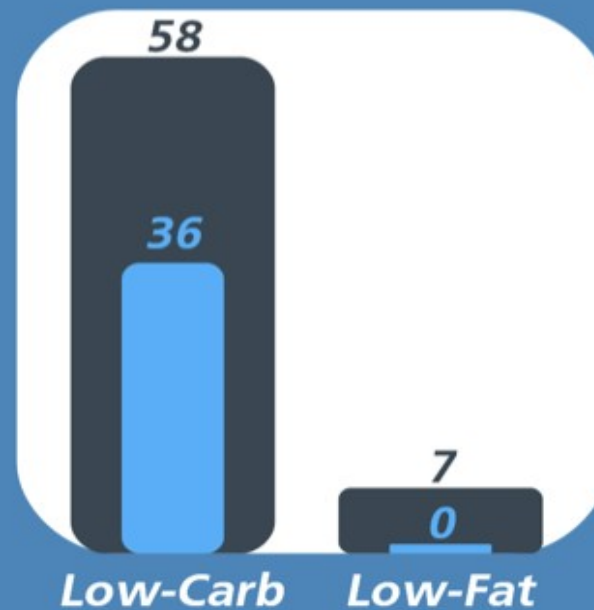


**Public Health
Collaboration**

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Healthy
Decisions**

Find out more @
www.PHCuk.org/RCTs

Weight Loss Results From Published Randomised Controlled Trials (RCTs) Between Low-Carb & Low-Fat Diets



**67 RCTs In Total
(2 Are Equal)**



Greater Weight Loss



Significantly Greater Weight Loss Between Groups

Limit on Saturated Fats is Unnecessary, says “State-of-the-Art Review” in Journal of American College of Cardiology. ... The JACC abstract reads: **“The recommendation to limit dietary saturated fatty acid (SFA) intake has persisted despite mounting evidence to the contrary.”** Jun 24, 2020

What to Eat with Diabetes or Prediabetes: ADA's New Nutrition Guidelines

OVERVIEW OF EATING PATTERNS



MEDITERRANEAN-STYLE

Description: Emphasizes plant-based food (vegetables, beans, nuts and seeds, fruits, and whole intact grains); fish and other seafood; olive oil as the principal source of dietary fat; dairy products (mainly yogurt and cheese) in low to moderate amounts; typically fewer than 4 eggs/week; red meat in low frequency and amounts; wine in low to moderate amounts; and concentrated sugars or honey rarely.

Potential benefits: Reduced risk of diabetes, A1C reduction, lower triglycerides, reduced risk of major cardiovascular events

VEGETARIAN OR VEGAN

Description: The two most common approaches found in the literature emphasize plant-based vegetarian eating devoid of all flesh foods but including egg (ovo) and/or dairy (lacto) products, or vegan eating devoid of all flesh foods and animal-derived products

Potential benefits: Reduced risk of diabetes, A1C reduction, weight loss, lowered cholesterol

LOW-FAT



Description: Emphasizes vegetables, fruits, starches (e.g., breads/ crackers, pasta, whole intact grains, starchy vegetables), lean protein sources (including beans), and low-fat dairy products. In this review, defined as total fat intake less than or equal to 30% of total calories and saturated fat intake less than or equal to 10%.

Potential benefits: Reduced risk of diabetes, weight loss

VERY LOW-FAT

Description: Emphasizes fiber-rich vegetables, beans, fruits, whole intact grains, nonfat dairy, fish, and egg whites and comprises 70–77% carbohydrate (including 30–60 g fiber), 10% fat, 13–20% protein.

Potential benefits: Weight loss, lowered blood pressure

LOW-CARBOHYDRATE

Description: Emphasizes vegetables low in carbohydrate (such as salad greens, broccoli, cauliflower, cucumber, cabbage, and others); fat from animal foods, oils, butter, and avocado; and protein in the form of meat, poultry, fish, shellfish, eggs, cheese, nuts, and seeds. Some plans include fruit (e.g., berries) and a greater array of non-starchy vegetables. Avoids starchy and sugary foods such as pasta, rice, potatoes, bread, and sweets. There is no consistent definition of “low” carbohydrate. In this review, a low-carbohydrate eating pattern is defined as reducing carbohydrates to 26–45% of total calories.

Potential benefits: A1C reduction, weight loss, lowered blood pressure, increased HDL-C and decreased triglycerides

VERY LOW-CARBOHYDRATE

Description: Similar to low-carbohydrate pattern but further limits carbohydrate-containing foods, and meals typically derive more than half of calories from fat. Often has a goal of 20–50 g of non-fiber carbohydrate per day to induce nutritional ketosis. In this review a VLC eating pattern is defined as reducing carbohydrate to less than 26% of total calories.

Potential benefits: A1C reduction, weight loss, lowered blood pressure, increased HDL-C and decreased triglycerides

DASH

Description: Emphasizes vegetables, fruits, and low-fat dairy products; includes whole intact grains, poultry, fish, and nuts; reduced in saturated fat, red meat, sweets, and sugar-containing beverages. May also be reduced in sodium

Potential benefits: Reduced risk of diabetes, weight loss, lowered blood pressure

PALEO

Description: Emphasizes foods theoretically eaten regularly during early human evolution, such as lean meat, fish, shellfish, vegetables, eggs, nuts, and berries. Avoids grains, dairy, salt, refined fats, and sugar.

Potential benefits: Mixed results and inconclusive evidence







May 18, 2020 · 55 min

56. American Diabetes Association CEO Tracey D. Brown "A Low Carb Diet Worked For Me"

Life in the Fasting Lane >

▶ Play Again

BROWN ANNOUNCES DEPARTURE AFTER TRANSFORMATIONAL TENURE.

The American Diabetes Association[®] (ADA), announced today that Chief Executive Officer Tracey D. Brown will be leaving the ADA effective October 6, 2021, to take a senior leadership role at **Walgreens** as President of Retail Products and Chief Customer Officer.

LIFESTYLE THERAPY Evidence-based lifestyle therapy for treatment of obesity should include three components		
MEAL PLAN	PHYSICAL ACTIVITY	BEHAVIOR
<ul style="list-style-type: none"> • Reduced-calorie healthy meal plan • ~500–750 kcal daily deficit • Individualize based on personal and cultural preferences • Meal plans can include: Mediterranean, DASH, low-carb, low-fat, volumetric, high protein, vegetarian • Meal replacements • Very low-calorie diet is an option for selected patients and requires medical supervision <p>Team member or expertise: dietitian, health educator</p>	<ul style="list-style-type: none"> • Voluntary aerobic physical activity progressing to >150 minutes/week performed on 3–5 separate days per week • Resistance exercise: single-set repetitions involving major muscle groups, 2–3 times per week • Reduce sedentary behavior • Individualize program based on preferences and take into account physical limitations <p>Team member or expertise: exercise trainer, physical activity coach, physical/occupational therapist</p>	<p>An interventional package that includes any number of the following:</p> <ul style="list-style-type: none"> • Self-monitoring (food intake, exercise, weight) • Goal setting • Education (face-to-face meetings, group sessions, remote technologies) • Problem-solving strategies • Stimulus control • Behavioral contracting • Stress reduction • Psychologic evaluation, counseling, and treatment when needed • Cognitive restructuring • Motivational interviewing • Mobilization of social support structures <p>Team member or expertise: health educator, behaviorist, clinical psychologist, psychiatrist</p>

In summary:

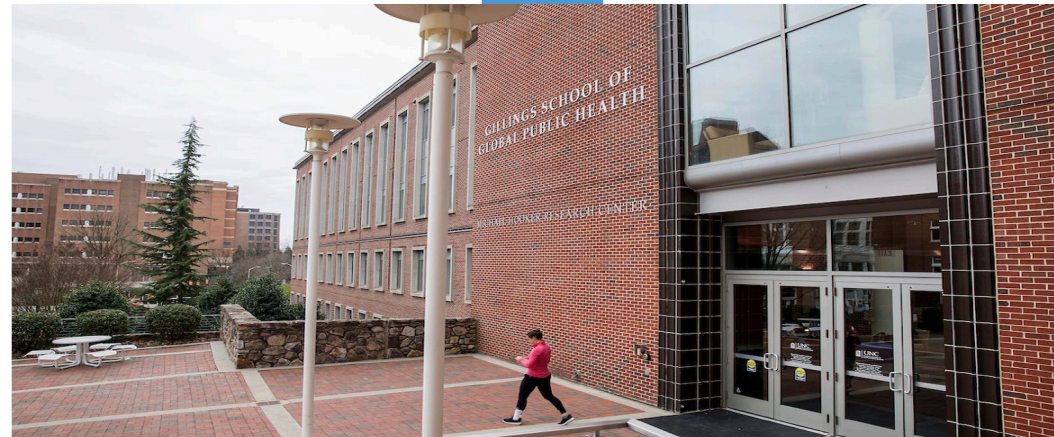
- 1) RCTs = Improved metabolic markers. LC>LF**
- 2) Journal of the College of Cardiology embraces saturated fat**
- 3) ADA recommends low and very low carb diets**
- 4) AACE/ACE recommend low-carb**

Why carb restriction has the potential to transform your clinical practice

Only 12 percent of American adults are metabolically healthy, Carolina study finds

Only 1 in 8 Americans are achieving optimal metabolic health, which carries serious implications for public health.

By the UNC Gillings School of Global Public Health,
Wednesday, November 28th, 2018



Exterior view of the Michael Hooker Research Center at the UNC Gillings School of Global Public Health on March 1, 2018, in Chapel Hill. (Johnny Andrews/UNC-Chapel Hill)



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Prevalence of Optimal Metabolic Health in American Adults: National Health and Nutrition Examination Survey 2009–2016

Joana Araújo et al. Metab Syndr Relat Disord. 2019 Feb.

Results: Changing from ATP III (Adult Treatment Panel III) guidelines to more recent cut points decreased the proportion of metabolically healthy Americans from 19.9% (95% confidence interval [CI]: 18.3-21.5) to 12.2% (95% CI: 10.9-13.6). Dropping WC from the definition increased the percentage of adults with optimal metabolic health to 17.6%. Characteristics associated with greater prevalence of metabolic health were female gender, youth, more education, never smoking, practicing vigorous physical activity, and low body mass index. Less than one-third of normal weight adults were metabolically healthy and the prevalence decreased to 8.0% and 0.5% in overweight and obese individuals, respectively.

Conclusions: Prevalence of metabolic health in American adults is alarmingly low, even in normal weight individuals. The large number of people not achieving optimal levels of risk factors, even in low-risk groups, has serious implications for public health.

THE METABOLIC SYNDROME



HEART DISEASE



LIPID PROBLEMS



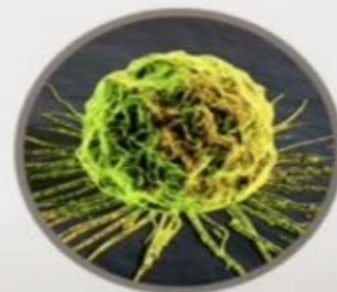
HYPERTENSION



TYPE 2 DIABETES



DEMENTIA



CANCER



**POLYCYSTIC
OVARIAN
SYNDROME**



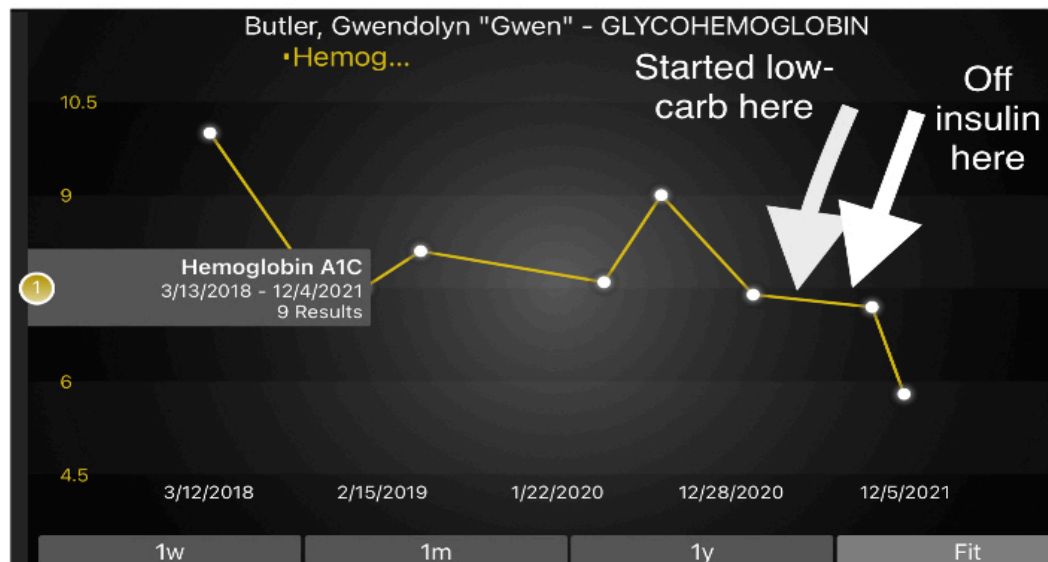
**NON-ALCOHOLIC
FATTY LIVER
DISEASE**

Renal



MICROALBUMIN URINE RA... 11/30/2021 10:45 AM			
	3 wk ago	3 mo ago	11 mo ago
Micro...	58.40	101.00	291.00
Creati...	155.00	115.00	154.00
Micro...	376.8 ^	878.3 ^	1,889.6 ^

Diabetes



Blood pressure

2/4/2020	8/20/2021	12/2/2021
170	194	132
66	65	58
98		
52	60	60
18	18	18
99	99	100
5' 3"	5' 3"	5' 3"
160 cm	160 cm	160 cm
124 lb 14.3 oz	131 lb 8.1 oz	128 lb 8.5 oz

PhotoGrid



Obesity

8/19/2020	6/3/2021	8/30/2021	12/2/2021
128	112	113	122
66	69	65	68
Before		After	
98.7			
72	75	64	62
18	18	18	18
93	95	100	100
5' 2"	5' 2"	5' 2"	5' 2"
157.5 cm	157.5 cm	157.5 cm	157.5 cm
264 lb 7.1 oz	218 lb 2.3 oz	193 lb 7.3 oz	177 lb 4 oz
119.95 kg	98.95 kg	87.75 kg	80.4 kg
50.1	50.1	50.1	50.1
48.37	39.9	35.38	32.42
2.29	2.08	1.96	1.88

The background of therapeutic carb restriction

Background

- **Who should consider carb restriction?** These guidelines are meant to be applied as a dietary intervention for specific conditions for which carbohydrate reduction has been shown to offer therapeutic benefits
- **Rapid physiologic changes** can be expected, and medication management must be timely to avoid predictable interactions between these changes and common medications.
- **A well-formulated carbohydrate-restricted** diet includes adequate energy, protein, fat, vitamins, and minerals. With adequate protein and fat, the dietary requirement for carbohydrate is zero (Institute of Medicine [U.S.], 2005; Westman, 2002).
- Even when no dietary carbohydrate is consumed, glucose-dependent tissues are able to utilize glucose produced through **gluconeogenesis and glycogenolysis** (Westman et al., 2007).
- Because dietary carbohydrate is not essential, it need not be a primary focus for certain therapeutic nutritional interventions.

Background

- **VLCK** (very low-carbohydrate ketogenic) diets recommend 30g or less of dietary carbohydrate per day (Hallberg et al., 2018).
- **LCK** (low-carbohydrate ketogenic) diets recommend **30-50g** of dietary carbohydrate per day (Saslow et al., 2017).
- **RC** (reduced-carbohydrate) diets recommend **50-130g** of dietary carbohydrate per day, a level that is higher than levels listed above and lower than the U.S. DRI for carbohydrate. Deliberate restriction of kcals may or may not be recommended at this level.
- Recommendations for deliberate kcal restriction are not typically part of VLCK and LCK clinical interventions but may be used in research protocols

Why we struggle?

- The Dietary Guidelines for Americans recommends that carbohydrates make up 45 to 65 percent of your total daily calories.
- So, if you get 2,000 calories a day, between 900 and 1,300 calories should be from carbohydrates. That translates to **between 225 and 325 grams of carbohydrates** a day.

The therapeutic potential of therapeutic carb restriction

The therapeutic potential of therapeutic carb restriction

- Therapeutic carbohydrate restriction can assist in improving all aspects of the metabolic syndrome, in part by helping to reduce blood glucose levels, which in turn can reduce fasting and postprandial insulin levels and improve insulin resistance (Volek & Feinman, 2005).
- The appropriate level of carbohydrate restriction to meet therapeutic goals will differ among patients. An amount of less than 50g of carbohydrate per day frequently leads to a general change in metabolism from “**glucocentric**” (where glucose is relied on as a primary energy source) to “**adipocentric**” (where ketone bodies and fatty acids are primary energy sources), although this level varies across individuals (Westman et al., 2007).

The therapeutic potential of therapeutic carb restriction

- With regard to hypertension, high circulating levels of insulin that accompany insulin resistance have been associated with sodium retention, proliferation of vascular smooth muscle, increased sympathetic nervous system activity, and diminished release of nitric oxide from the endothelium (Hsueh, 1991; Yancy et al., 2010). By reducing insulin levels, reducing carbohydrate intake may be expected to improve blood pressure and to have an effect on fluid and electrolyte balance.
- With regard to dyslipidemia, high circulating levels of insulin have been associated with increased plasma triglyceride(TAG) concentration, decreased high-density lipoprotein (HDL) cholesterol concentration, and increased levels of atherogenic small dense particles of low-density lipoprotein (LDL) cholesterol (Ferrannini, Haffner, Mitchell, & Stern, 1991; Reaven, Chen, Jeppesen, Maheux, & Krauss, 1993). Reducing carbohydrate may improve the TAG/HDL ratio and certain markers of inflammation (Forsythe et al., 2008).
- Nutritional ketosis may be a contributing factor in reducing appetite (Gibson et al., 2015).

How to initiate therapeutic carb restriction

How to initiate therapeutic carb restriction

- Good candidates are patients with metabolic conditions (see Paoli, Rubini, Volek, & Grimaldi, 2013; Mardinoglu et al., 2018).
- Patients should also be able and prepared to use a blood glucometer to check serum glucose if on insulin or insulin secretagogues (sulfonylureas and meglitinides) and to communicate with the health care team during the diet intervention (Cucuzzella, Hite, Patterson, & Heath, 2019).
- The intervention should be individualized with regard to the patient's existing nutrition habits, resources, living arrangements, and roles (i.e. who does the cooking and food purchasing).

How to initiate therapeutic carb restriction

- **Laboratory tests** as indicated for the presenting condition should be completed to rule out acute pathology and establish baseline metrics
- Blood tests: • Complete blood count (**CBC**) • Fasting comprehensive metabolic panel (**CMP**), including: o glucose o electrolytes o kidney function o acid-base balance • Fasting lipid panel, including HDL cholesterol and triglycerides • Thyroid-stimulating hormone (**TSH**) • Hemoglobin A1c (**HbA1c**) • Liver function (including gamma-glutamyl transferase [**GGT**]) Urine tests: • Urine albumin: creatinine ratio 4.3.1 Other tests that may be considered **Fasting total insulin**, homeostatic model of insulin resistance (HOMA-IR), or postprandial insulin assay/Kraft protocol (if available and affordable) Full thyroid function panel, including **TSH, fT3, fT4, RT3** and antibodies Vitamin D High-sensitivity C-reactive protein (**hsCRP**) Advanced lipid panel Glucose tolerance testing (GTT) Peak flow test Erythrocyte sedimentation rate (**ESR**) Serum **uric acid** **Coronary calcium score** - for risk stratification and ongoing monitoring **C-peptide levels** - for patients who are on insulin, to ensure that the patient is still making insulin (see Section 6.1 below).

How to initiate therapeutic carb restriction

- Because of concerns regarding de-prescribing pharmacological therapies, the following conditions require close, frequent medication review when therapeutic carbohydrate reduction is used: • Type 1 diabetes mellitus • Type 2 diabetes mellitus • Hypertension • Chronic kidney disease
- The concern is that “high” protein levels may impair renal function, but there is little evidence to suggest that protein intakes at the levels consumed on a lowcarbohydrate diet are harmful for people with moderately decreased kidney function. For patients with advanced kidney disease, the recommendation for therapeutic carbohydrate restriction must be made on a case by case basis, as the standard “renal diet” may conflict with a low-carbohydrate diet in some regards.
- Patients with history of gout are at a higher risk of flare when transitioning to the diet, although long-term gout flares may improve on low-carb diets (Steelman & Westman, 2016). Consider prophylactic allopurinol during transition.

How to initiate therapeutic carb restriction

- Some side effects of a low-carbohydrate diet such as lightheadedness, fatigue, and headache are due to low body salt and hypotension, especially in patients on blood pressure-lowering therapy. High levels of insulin may cause the kidneys to retain salt and water (Brands & Manhiani, 2012). When insulin levels are lowered due to either reduced insulin dose or reduced insulin secretion because of reduced carbohydrate consumption, this can cause diuresis and symptomatic hypotension. Unless there is a history of heart failure or salt-sensitive hypertension, patients should not restrict sodium on low-carbohydrate diets and will likely need additional sodium and hydration, especially in the first several weeks. For most patients, 2-3g of sodium (or 5-7g of salt) per day is appropriate. This can be accomplished by salting food liberally, or sodium can be supplemented by advising patients to sip on a broth made with regular sodium bouillon cubes (Steelman & Westman, 2016).

How to adjust medications, monitor, and evaluate for follow-up

How to adjust medications

- If patients are on insulin or sulfonylureas when beginning a low-carbohydrate diet, it is recommended that doses be reduced immediately to prevent hypoglycemia.
- Thiazolidinediones may be stopped because they contribute to weight gain but are unlikely to cause hypoglycemia.
- DPP-4 inhibitors and GLP-1 analogues are safe to use, however SGLT-2 inhibitors should be used with caution because they can exacerbate dehydration and have been associated with diabetic ketoacidosis (DKA) episodes.
- It is recommended that SGLT2-i be stopped if a very low-carbohydrate diet is to be followed.
- Metformin can be used effectively in conjunction with a low-carb diet (Steelman & Westman, 2016). Metformin does not present the same risks of hypoglycemia as insulin or sulfonylureas.

How to adjust medications

- Blood pressure will need to be monitored in the clinic, ideally every 2-4 weeks during initiation of the dietary intervention.
- In addition, patients should be shown how to self-monitor blood pressure and be made aware of symptoms of low blood pressure, such as light-headedness upon standing or severe Clinical Guidelines for Therapeutic Carbohydrate Restriction <https://www.lowcarbusera.org/clinical-guidelines/> Version 1.3.8 – Published September 25, 2020 Page 15 of 20 fatigue.
- These symptoms and/or systolic blood pressure below 120 should prompt reduction of anti-hypertensive medication.

How to adjust medications

- Warfarin doses may need to be adjusted and INR should be monitored more frequently during the diet transition (Steelman & Westman, 2016). Medications that have a narrow therapeutic range such as valproic acid (Depakote) and lithium should be monitored for potential dosing changes. Medications that interfere with lipolysis should be replaced or discontinued if possible, including: niacin, beta blockers, antidepressants, and antipsychotics.
- After the initiation of therapeutic carbohydrate reduction, the patient should be advised to check blood pressure and, if applicable, blood glucose daily, including some post-prandial readings 1-2 hours after a meal. Having tools available so that patients can track medication, blood pressure, and glucose is indispensable to providing a safe transition to a low-carbohydrate diet

How to adjust medications

- Because dietary carbohydrate is not an essential nutrient, a well-formulated, low-carbohydrate diet that includes a variety of vegetables presents no health risks from nutritional deficits
- Whether and in what manner to allow additional dietary carbohydrate into the diet will be an individual decision. It is unlikely that a return to previous levels of carbohydrate consumption would be recommended; to do so would likely lead to a return of previous health conditions that reduction of dietary carbohydrate ameliorated

Resources

FOODS TO HAVE

Protein*

Seafood: All (including shellfish)

Red Meat: Beef, bison, buffalo, lamb, elk, venison

Poultry: chicken, turkey, eggs, duck, pheasant

Pork: bacon, sausage, ham (low sodium)

Dairy: cheese, cream, raw, milk, yogurt

Organ Meats: All

Fats

Animal Fats*

Chocolate/ Cacao/Cocoa

Avocado

Avocado Oil

Coconut Milk (canned)

Butter*

Coconut: Oil, Butter, Meat, Flakes

Ghee*

Extra-Virgin Olive Oil

Bone Broth and Stews*

Olives (all)

** Whenever possible, choose wild caught fish, organic, and grass fed*

Fermented Foods

Sauerkraut

Bragg's ACV Drinks

Pickles

Fermented Assorted Veggies

Herbs

Anise

Ashwaghandha

Basil

Chamomile

Coriander

Echinacea

Ginseng

Kava Kava

Lemongrass

Oregano

Peppermint

Sage

Thyme

Turmeric

Valerian

Vegetables

Anise

Arugula

Artichoke

Asparagus

Bell Peppers

Bok Choy

Broccoli

Brussels Sprouts

Cabbage

Cauliflower

Celery

Fruit

Lemon/Lime

Berries (1/2 cup per day max)

Granny Smith Apple (1/2 per day max)

Grapefruit (1/2 per day max)

Nuts & Seeds

1/4 cup per day

Almonds

Almond Milk

Almond Butter

Brazil Nuts

Cashews

Chia Seeds

Flax Seeds

Hazelnuts

Macadamia Nuts

Pecans

Pine Nuts

Pistachios

Pumpkin Seeds

Walnuts

Sesame Seeds

Sunflower Seeds

Collard Greens

Cucumber

Garlic

Green Beans

Greens

Kale Leeks

Lettuce

Mushrooms (all)

Okra

Onion/Shallots

Radish

Rhubarb

Snow Peas

Spaghetti Squash

Spinach

Sprouts (all types)

Sugar Snap Peas

Summer Squash

Swiss Chard

Watercress

Zucchini

FOODS TO HAVE IN MODERATION

Max of 1 cup of all these combined, per day

Vegetables

Max of 1/2 cup every 3 days

Acorn Squash	Parsnips
Beets	Pumpkin
Butternut Squash	Rutabaga
Delicate Squash	Sweet Potatoes
Jicama	Yams

Fruit

Max of 1/4 cup per day

Apricots	Nectarines	Pomegranate
Bananas	Oranges	Star Fruit
Cherries	Papaya	Tangerines
Dates/Figs	Peaches	Tomatoes
Grapes (red/green)	Pears (all types)	Watermelon
Mango	Pineapple	
Melon	Plum	

FOODS TO AVOID

Protein

Meats with added sugar, MSG, sulfites or carrageenan

Grains/Legumes

Quinoa	Buckwheat
Beans (black/red)	Chickpeas
Rice	Lentils
	Oats

Fruit

Dried Fruit

Refined Carbohydrates

Bread	Chips	Pastries
Bagels	Cookies	Pita Bread
Breadsticks	Couscous	Pizza
Brownies	Crackers	Rolls
Cake/Cupcakes	Croissants	Tortillas
Candy	Muffins	Tortilla Chips
Cereal/Granola	Pasta	

Vegetables

Regular Potatoes: baked, mashed

QUICK REFERENCE



Drink 4 to 8 cups of water daily



No hydrogenated oils like margarine and vegetable oil shortenings



Include healthy fats with every meal (butter, oils: olive, avocado, coconut)



Maximum of 1-2 servings of fruit or starchy veggies daily



No sugar, processed foods, or grains



No fast foods

AA

thesmhp.org



Society of Metabolic
Health Practitioners

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Menu

Menu

About Us



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Forums

Education



Accreditation



Providers

Clinical Guidelines



Contact Us

Clinical Guidelines

These guidelines provide clinicians with a general protocol for implementing therapeutic carbohydrate restriction as a dietary intervention in hospitals or clinics. These guidelines are meant to be applied as a dietary intervention for specific conditions for which carbohydrate reduction has been shown to offer therapeutic benefits.

Adele Hite, PhD, MPH, RD

Organize Lifestyle factors (NEST & ROPE)

Nutrition and IF

Exercise

Stress(less), Sleep(more)

Trauma(less), Thinking(positive)

Relationships

Organisms

Pollution

Emotions, Life Experience

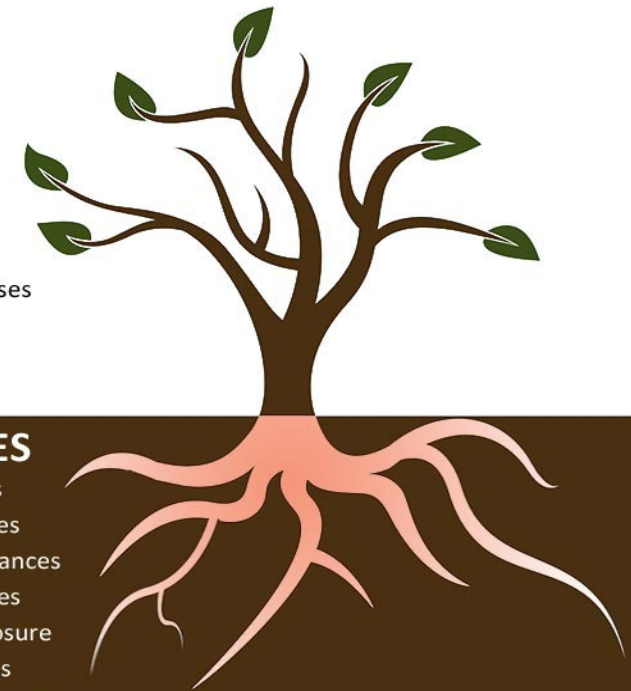


DISEASES

- Diabetes
- Cancer
- Heart Disease
- Obesity
- Autoimmune Diseases
- Fibromyalgia
- Arthritis

ROOT CAUSES

- Immune Imbalances
- Structural Imbalances
- Inflammatory Imbalances
- Hormonal Imbalances
- Toxic Chemical Exposure
- Digestive Imbalances
- Mitochondrial Dysfunction

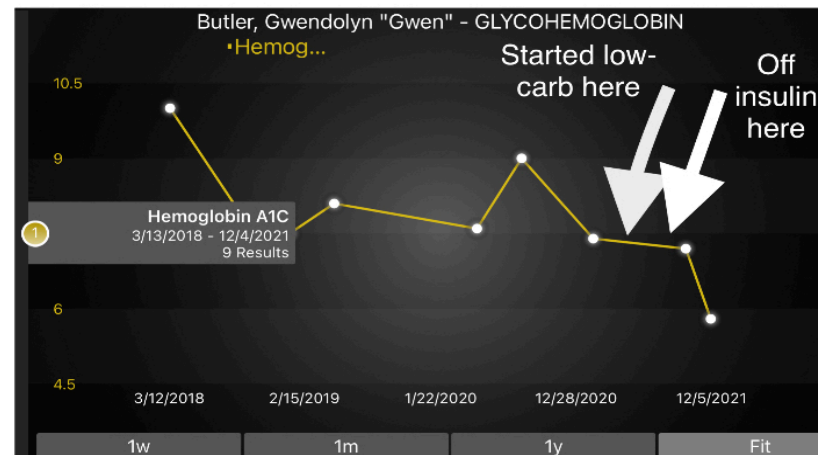


Challenge conventional thinking



< MICROALBUMIN URINE RA... 11/30/2021 10:45 AM

	3 wk ago	3 mo ago	11 mo ago
Micro...	58.40	101.00	291.00
Creati...	155.00	115.00	154.00
Micro...	376.8 ^	878.3 ^	1,889.6 ^



2/4/2020	8/20/2021	12/2/2021
170	194	132
66	65	58
98	60	60
52	18	18
18	99	100
99	5' 3"	5' 3"
5' 3"	160 cm	160 cm
160 cm	124 lb 14.3 oz	131 lb 8.1 oz
124 lb 14.3 oz		128 lb 8.5 oz





