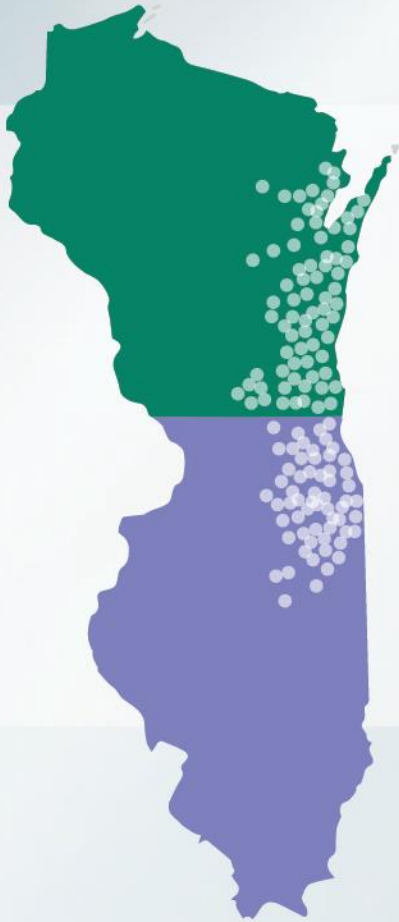


# Practical Approaches to Implement and Maintain a Low-Carbohydrate Diet (Part 1)

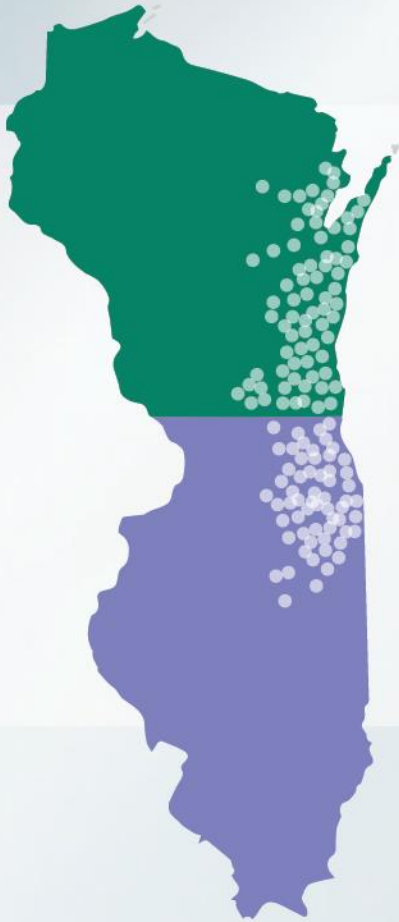


February 24, 2024

Dr Tony Hampton, MD, MBA, MS-HNFM, ABOM  
Family and Obesity Medicine Board Certified  
Chair Society of Metabolic Health Practitioners Outreach  
Committee  
Chair-elect Advocate Midwest Governing Council  
Advocate Midwest Primary Care Service Line Leader South  
Region Chicago



# Objectives

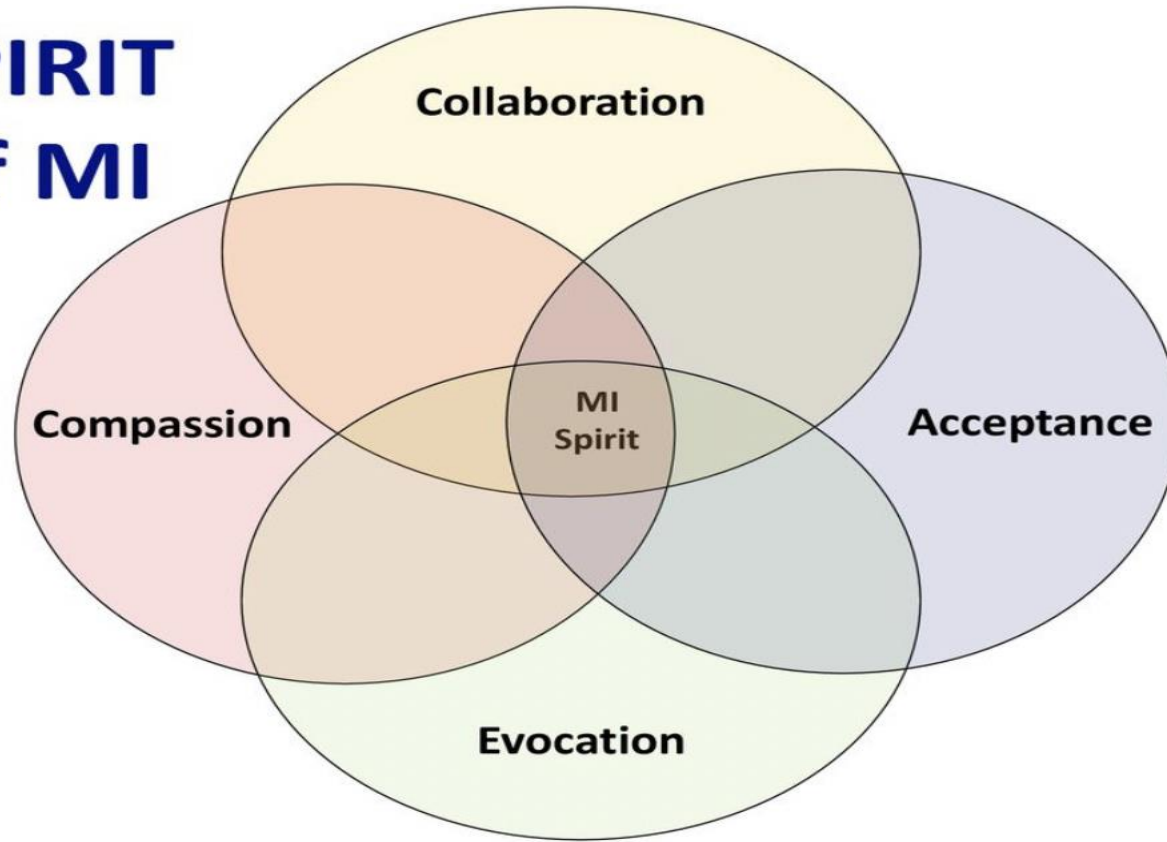


- Understand how to apply motivational interviewing to the patient visit
- Barriers to adopting dietary changes (ie, comorbidities)
- Real-world approach to patient challenges
- Deprescribing



# Objective one: Motivational Interviewing

## SPIRIT of MI



## Partnership

- **Partnership** means working in **collaboratively** with the patient, where the focus is **supportive** rather than **persuasive**.
- It means working **alongside** a patient rather than in front of or opposed to them.
- A confronting approach is the antithesis of the spirit of **motivational interviewing**

## Four Key Principles of MI



## Acceptance

Acceptance is a very Rogerian term and in the context of motivational interviewing is divided into four key points, these being:

1. Absolute worth
2. Autonomy and support
3. Affirmation and,
4. Accurate empathy

## Four Key Principles of MI



## Compassion

### Compassion

Compassion means that as the helper, we are trying to work with patients in a non-judgmental, non-blaming, non-shaming way and are striving to be as empathic as possible.

## Four Key Principles of MI



## Evocation

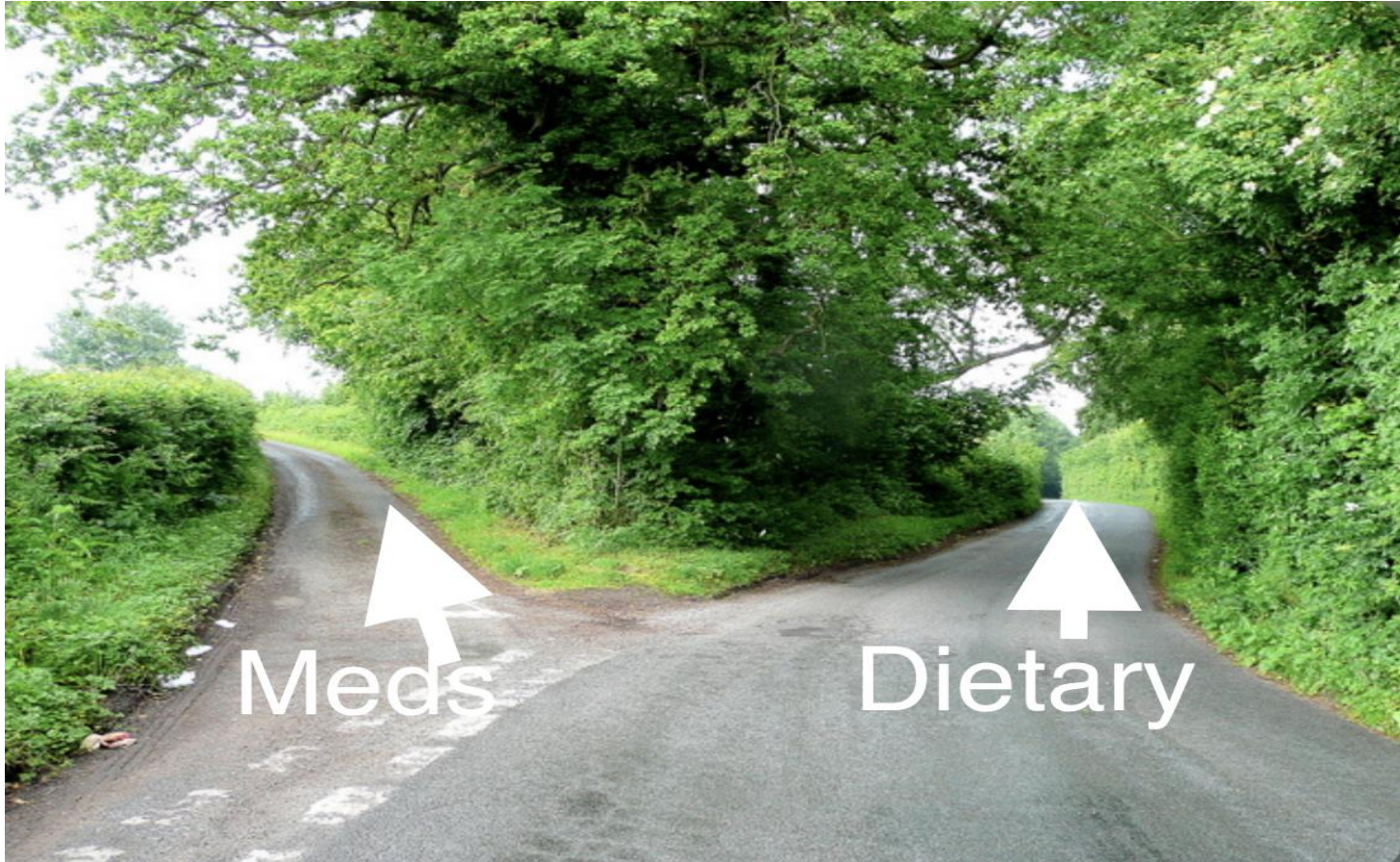
Evocation means to draw out of the client their own perceptions, goals, and values. Thus, the doctor or clinician starts with the assumption that the resources and motivation for change reside in the patient.

In practice, this means that the doctor or clinician is eliciting from the patient, rather than imparting information or opinions and so is doing more listening than talking.

## Four Key Principles of MI

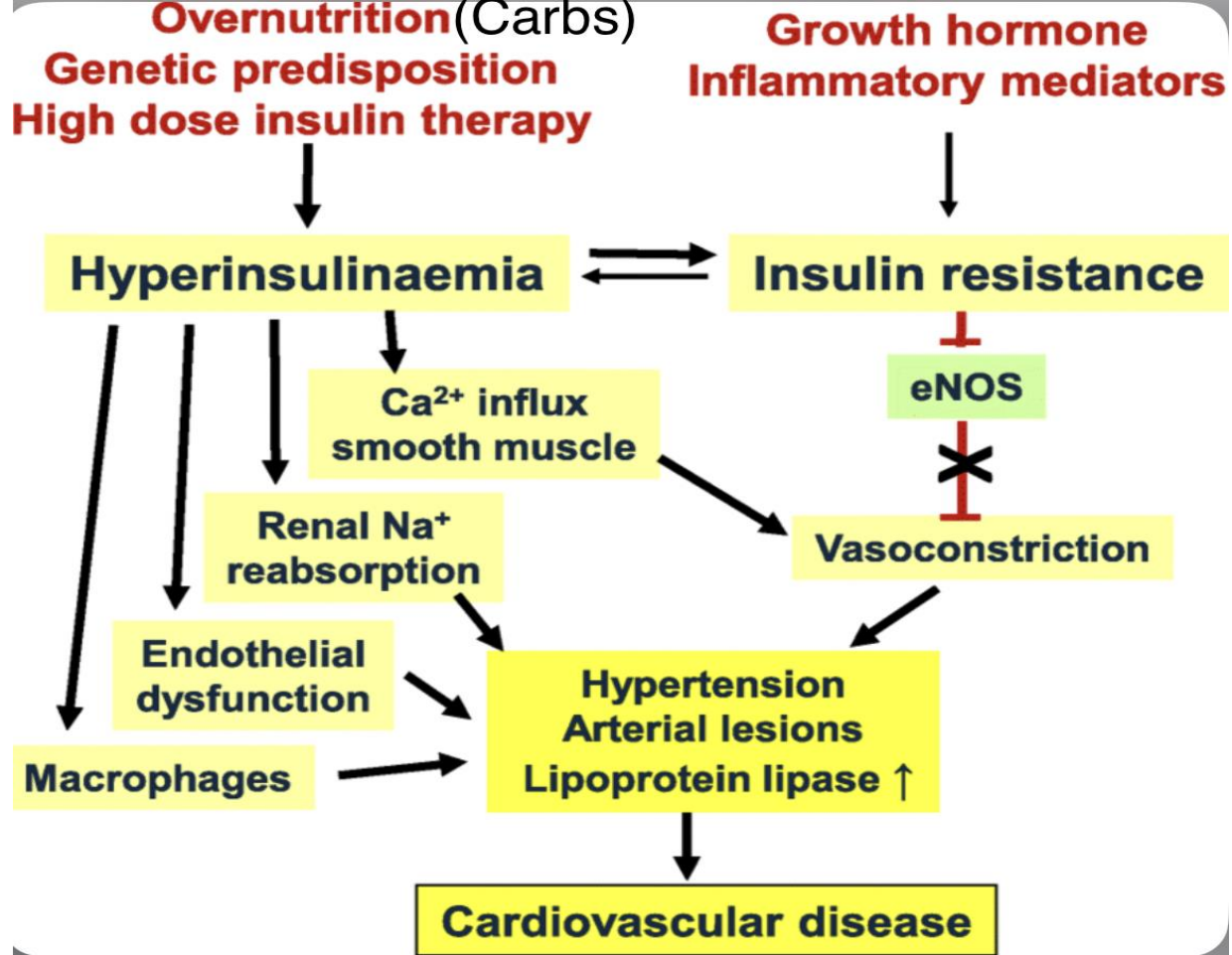


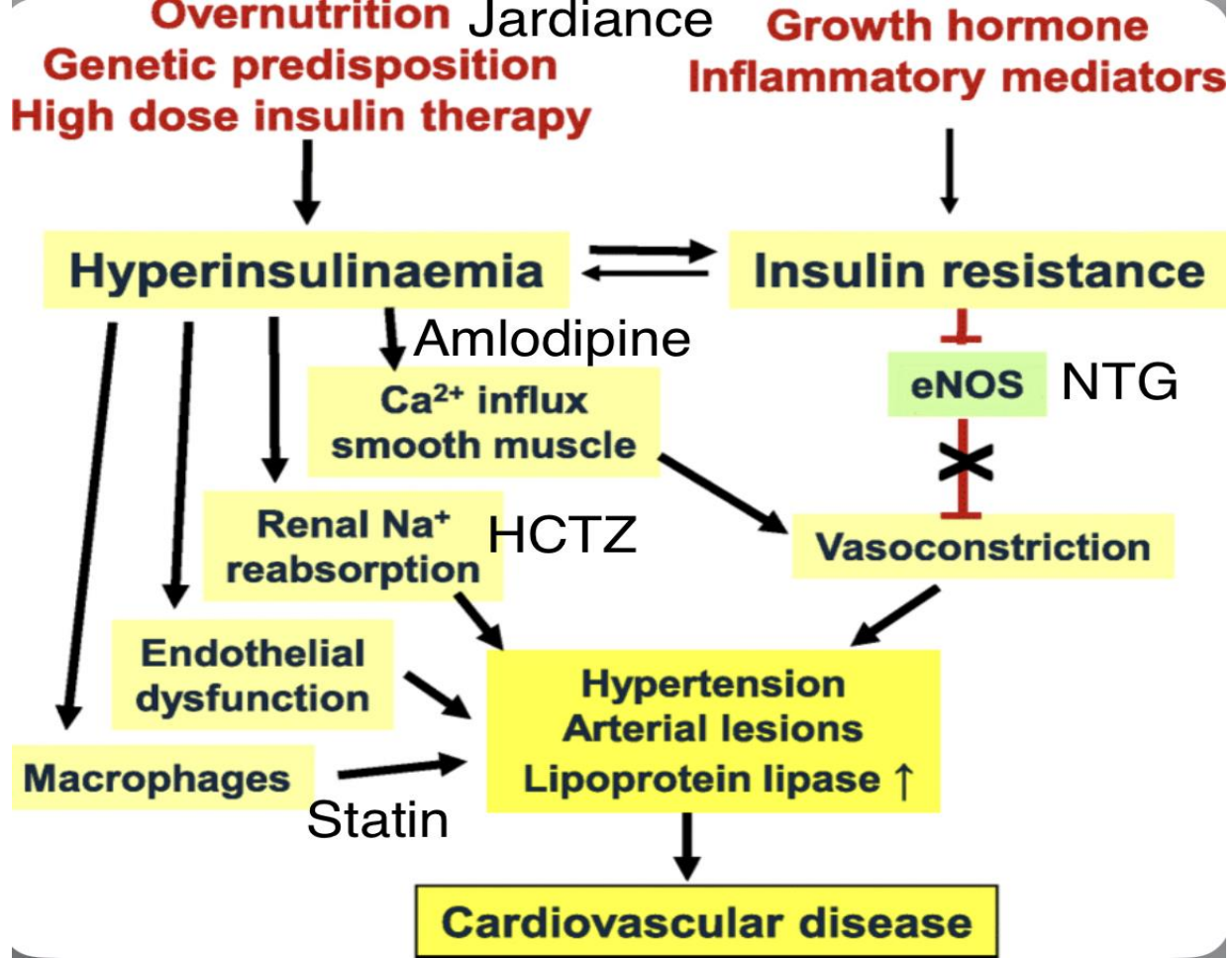




Meds

Dietary





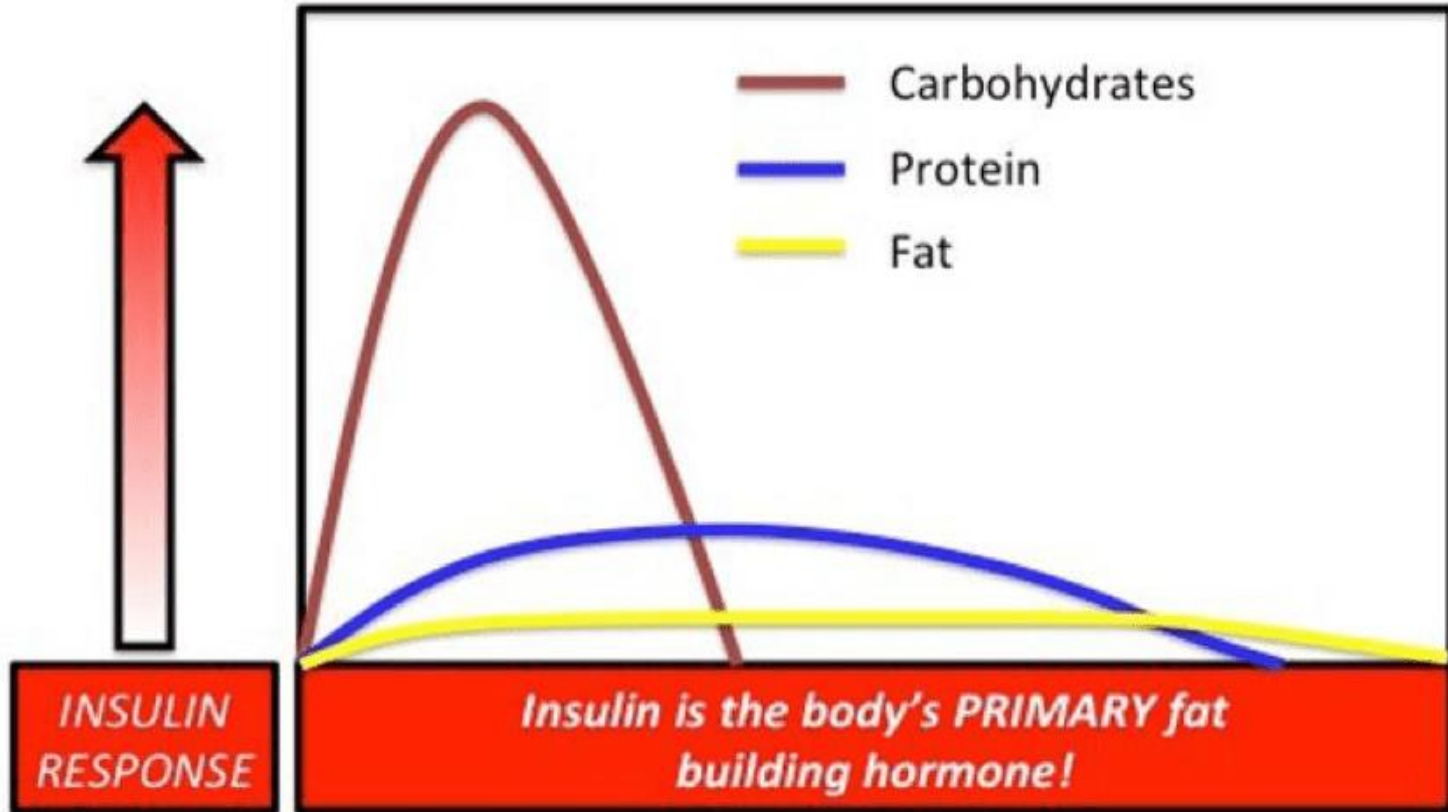


**THE**





# Insulin Response to Protein, Fat & Carbs





RETURN  
ON  
INVESTMENT

# Objective two: Barriers to adopting dietary changes

## Behaviour change in **Four** steps



Can Dr and patient  
agree on shared  
health **goals**?



At review reflect on what is  
working, sincere compliments  
on successes: **noticing**



# GRIN!



Explore relevant  
**resources**  
and patient  
**resilience**



Agree next small  
**increments**  
towards agreed goals

# The social determinants of health



## Economic Stability

- Employment
- Income
- Expenses
- Debt
- Medical bills
- Support



## Neighborhood and Physical Environment

- Housing
- Transportation
- Safety
- Parks
- Playgrounds
- Walkability



## Education

- Literacy
- Language
- Early childhood education
- Vocational training
- Higher education



## Food

- Hunger
- Access to healthy options



## Community and Social Context

- Social integration
- Support systems
- Community engagement
- Discrimination



## Health Care System

- Health coverage
- Provider availability
- Provider bias
- Provider cultural and linguistic competency
- Quality of care

## Health Outcomes

Mortality

Morbidity

Life Expectancy

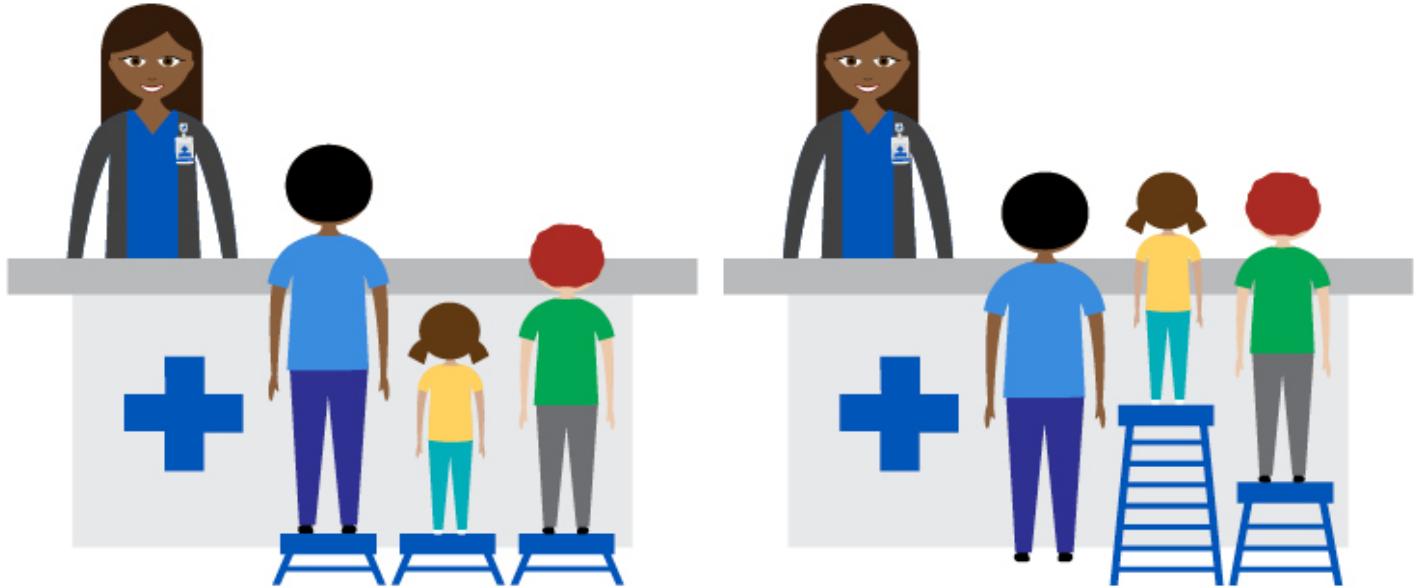
Health Care Expenditures

Health Status

Functional Limitations

Source: Kaiser Family Foundation





Equality/Equity

## Objective three: Real-world approach to patient challenges

To be successful, healthcare programs must create a paradigm shifts to address:

- 1) **Metabolic Health AND**
- 2) **Social Determinants of Health**

# Healthy living program



# Diabetes prevention program





# Food Farmacy



# Weight Management Program

With provider, patient decides best nutrition plan, ideally counseling with provider, otherwise referral out



## Eating Plan/ Nutrition

- Nutrition Counseling (dietitian)
- Diabetic Educator
- HMR
- Diabetes Prevention Program
- Foodsmart
- Obesity Specialist (Bariatrician) Referral



## Physical Activity/ Exercise

- Physical Therapy – pain, deconditioning, billable and covered (identify locations with right access)
- Massage Therapy
- AAH Wellness Centers



## Lifestyle/Behavior r Therapy

- Integrative Health Coaching (Healthy Me)
- Behavioral Therapist
- Eating disorder specialist
- Sleep specialist referral
- HMR
- Diabetes Prevention Program
- Employee Assistance Program (EAP)



## Pharmacotherap y

- Obesity Specialist (Bariatrician) Referral
- Review of medications causing weight gain



## Bariatric Procedures

- Procedures (define appropriate referral/service)
  - Endoscopic
  - Restrictive
  - Malabsorptive
  - Revisional
- Surgical
- Long-term surgical care for sustained weight loss

# Foodsmart

## An ecosystem for population health

### Telenutrition Network of Registered Dietitians

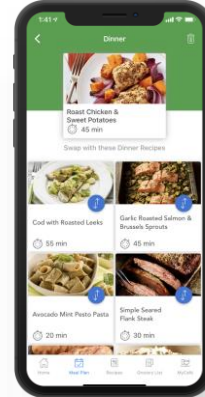
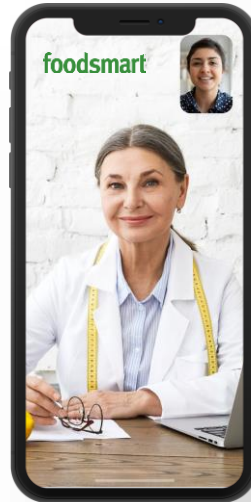
Expert Guidance



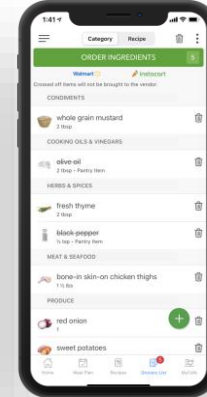
### Digital Nutrition Platform and Marketplace

A Supportive Environment

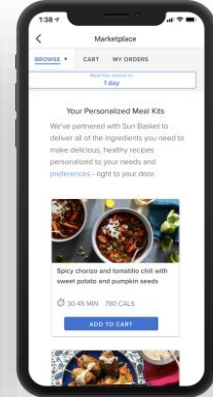
The first Foodcare ecosystem combining a national telenutrition network of Registered Dietitians using leading personalized digital nutrition platform with the most broadly integrated healthy food buying marketplace



Meal Planning



Grocery Ordering  
and Delivery



Meal Ordering

Yields long term behavior change & results

# FOOD SMART

## Improving food security & health equity



Identify food  
and nutrition  
insecure  
members

### INTEGRATIONS

Help members access food cards and medically tailored meals

Integrate with PCP and other providers

Connect members with local food banks and support programs like WIC

Identify and enroll eligible members in SNAP

### OUTCOMES

Targeted nutrition assistance

Improved clinical guidance

Community engagement

Food affordability



## Advancing Whole Person Health

Advocate Aurora Enterprises (AAE) strategically invests in and acquires consumer health and wellness companies to advance innovative solutions that go beyond traditional clinical care. Grounded by our health care experience, AAE's growing portfolio of companies aims to address people's broader health needs to help them live well at every stage of life.

### CONSUMER HEALTH AND WELLNESS



Clinical care is only one of many factors impacting a person's health.



Consumers are investing \$1 trillion in their own health.



Ability to impact health requires deeper and more frequent interactions with customers.



New sources of accretive revenue can offset declines in core business profitability.

### FOCUS AREAS

Helping people live well at every stage of life:

**Aging Independently** enables aging seniors to thrive safely and comfortably in their homes.

**Personal Wellness** helps people achieve their mind, body and nutrition goals.

By investing in these focus areas, AAE works toward improving health, increasing lives served, deepening customer relationships and generating recurring, accretive cash.

### PORTFOLIO



**Scott Powder**  
President



**Sheetal Sobti**  
System Vice President,  
Aging Independently



**Dipa Mehta**  
System Vice President,  
Transa

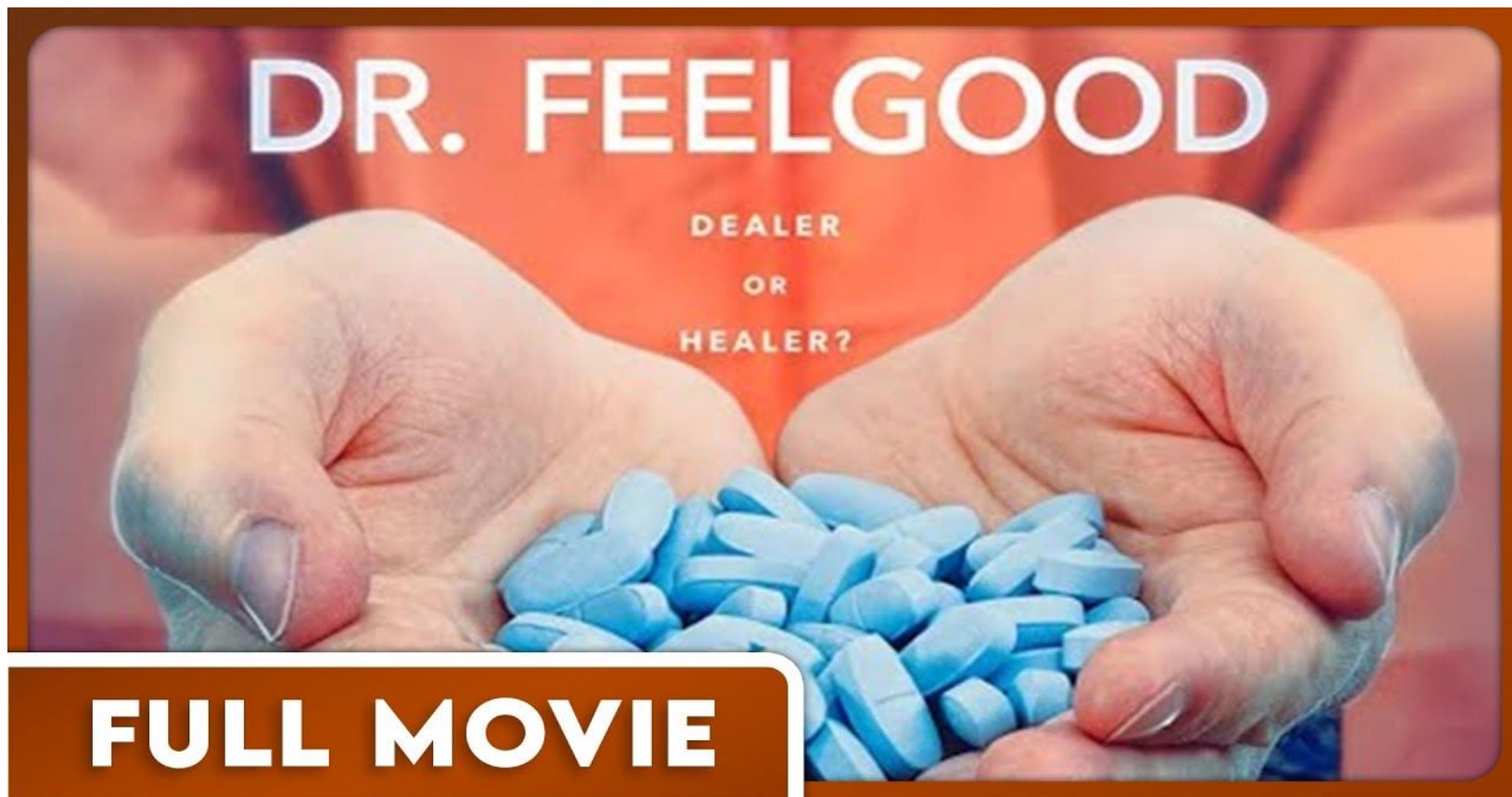


**Charu Mehta**  
Executive Director,  
Operations



**Dave Fergus**  
System Vice President,  
Personal Wellness

Clinical applications to initiating low-carb and deprescribing



## 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

Ashwaganda

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

<https://linktr.ee/drtonyhampton>



**@drtonyhampton**

Chair Outreach Committee for the Society of  
Metabolic Health Practitioners.

YouTube channel

Patient handout: what to eat on low carb

How to adopt a low carb diet educational  
video

Why Adopt a low carb diet educational video

For clinicians: Guide to therapeutic carb  
restriction



Protecting Your NEST with Dr. Tony  
Hampton

Chair Society of Metabolic Health Practitioner



PROTECTING  
YOUR  
**N.E.S.T.**

# HOW TO ADOPT A LOW-CARB DIET

It's easier than you think.



Dr. Tony Hampton

44:24



## How to adopt a low carb high-fat



Dr Tony Hampton · 8K views · Streamed 1 year ago

# 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**

# The background of therapeutic carb restriction



# Background

- **Who should consider carb restriction?** Anyone who desires metabolic health
- **Rapid physiologic changes** can be expected when using this approach 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).

# 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.

# Why do patients struggle to normalize their A1c?

- 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 “**gluco-centric**” (where glucose is relied on as a primary energy source) to “**adipo-centric**” (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

- **Hypertension**: high insulin = sodium retention, decreased nitric oxide, and proliferation of vascular smooth muscle tone. (Hsueh, 1991; Yancy et al., 2010).
- **Dyslipidemia**: high insulin = 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).
- **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

- Patients must have a way to monitor blood glucose via blood glucometer or continuous glucose meter 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).
- Dr. Sarah would say no GPS (grains, potatoes, or sugar)
- **VLCK** (very low-carbohydrate ketogenic) diets recommend **30g or less** of dietary carbohydrate per day (Hallberg et al., 2018).



# 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)
  - Fasting lipid panel, including HDL cholesterol and triglycerides
  - Thyroid-stimulating hormone (TSH)
  - Hemoglobin A1c (HbA1c)
  - Urine albumin: creatinine ratio

# How to initiate therapeutic carb restriction

- Additional considerations:
- Gamma-glutamyl transferase [**GGT**])
- **Fasting total insulin**, homeostatic model of insulin resistance (HOMA-IR)
- Full thyroid function panel, including **TSH, fT3, fT4, RT3** and antibodies
- **Vitamin D** High-sensitivity
- C-reactive protein (**hsCRP**)
- 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

# How to initiate therapeutic carb restriction (de-prescribing)

- **Conditions** require close, frequent medication review when therapeutic carbohydrate reduction is used: • Type 1 diabetes mellitus • Type 2 diabetes mellitus • Hypertension • Chronic kidney disease
- **“High” protein** concerns: there is little evidence to suggest that dietary protein levels may impair renal function 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 a 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

- Keto flu: 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).
- Tx: For most patients, 2-3g of sodium (or 5-7g of salt) per day is appropriate. This can be accomplished by salting food liberally, sip on a broth made with regular sodium bouillon cubes (Steelman & Westman, 2016). Dr. Sarah: Pickles
- Tx: Hydration to keep fluid volume normal

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

# How to adjust medications

- Biggest risk for diabetes: hypoglycemia
- Patients educated to check blood glucose daily, including some post-prandial readings 1-2 hours after a meal.
- Meds of concern: SGLT2 inhibitors, insulin, and sulfonylureas
- SGLT-2 inhibitors: use with caution because they can exacerbate dehydration and have been associated with diabetic ketoacidosis (DKA) episodes.
- Insulin or sulfonylureas: 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 analogs are safe to use.
- 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.
- Virta/Dr. Tro: App. Advocate Health: The pharmacy team

# How to adjust medications



[Front Nutr.](#) 2021; 8: 688540. Published online 2021  
Aug 9. doi: [10.3389/fnut.2021.688540](https://doi.org/10.3389/fnut.2021.688540)

PMCID: PMC8380766 | PMID: [34434951](https://pubmed.ncbi.nlm.nih.gov/34434951/)

## Adapting Medication for Type 2 Diabetes to a Low Carbohydrate Diet

[Mark Cucuzzella](#),<sup>1, \*</sup> [Karen Riley](#),<sup>2</sup> and [Diana Isaacs](#)<sup>3</sup>,  
International Working Group on Remission of Type 2  
Diabetes



# How to adjust medications

Medication adjustments for LCD meal plans summary of studies.

Study	Type of medication	Adjustments made	Frequency of monitoring for medication adjustments
Yancy et al. (19) (n = 21)	Insulin	Reduced 50% upon starting diet.	Every other week for 16 weeks
Single-arm pilot intervention trialType 2 diabetes	Sulfonylureas	Reduced 50% or discontinued upon starting diet.	
	Diuretics	Reduced 50%. Discontinued if on low dose (25 mg of hydrochlorothiazide or 20	

# How to adjust medications

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# 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.
- 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.lowcarb.com/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 a reduction of anti-hypertensive medication.

# How to adjust medications

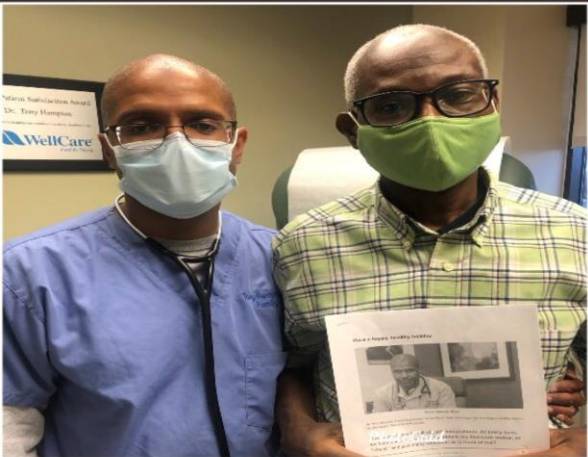
- **Warfarin** doses may need to be adjusted and INR should be monitored more frequently during the diet transition (Steelman & Westman, 2016).
- Medications that have a narrow therapeutic range such as **valproic acid** (Depakote) and **lithium** should be monitored for potential dosing changes.
- Medications that interfere with **lipolysis** should be replaced or discontinued if possible, including: **niacin, beta blockers, antidepressants, and antipsychotics**.

# What's possible?

## Morning clinic session:

- 1)70 y/o male: **Lost 8 lbs** since Jan 2018 HgbA1c: May 2018 8.3 - 7.5
- 2)59 y/o male: **Lost 12 lbs** since March 2017 (not well controlled however)
- 3)44 y/o male: **Lost 18 lbs** since Nov 2017
- 4)70 y/o male: **Lost 26 lbs** since Nov 2016
- 5)80 y/o female: No significant weight change
- 6)74 y/o male: **Lost 10 lbs** since May 2018
- 7)64 y/o male: **Lost 7 lbs** since Feb 2018
- 8)36 y/o male: **Lost 6 lbs** since July 2018 **Lost 33 lbs** since 2015, read book. Off Glipizide/Metformin. Hemoglobin A1c 6.0 Aug 2018
- 9)69 y/o male: **Lost 10 lbs** since Jan 2018
- 10)74 y/o male: Refused to be weighed
- 11)76 y/o female: **Lost 4 lbs** since May 2018
- 12)51 y/o female: **Lost 7 lbs** since May 2018 (unfortunately, weight loss was due to poor control)
- 13)75 y/o female: **Lost 33 lbs** since July 2017 Participate in the DPP. Initial Hgb A1c July 2017: 6.1. July 2018 Hgb A1c 5.4

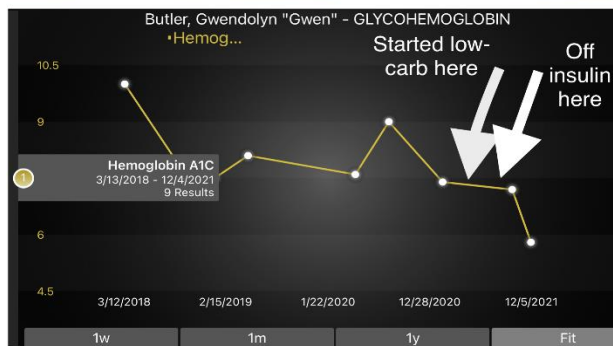
# Challenge conventional thinking



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

**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 ^



# Organize Lifestyle factors (NEST & ROPE)

Nutrition and IF  
Exercise  
Stress(less), Sleep(more)  
Trauma(less), Thinking(positive)

Relationships  
Organisms  
Pollution  
Emotions, Life Experience

Information Classification: General

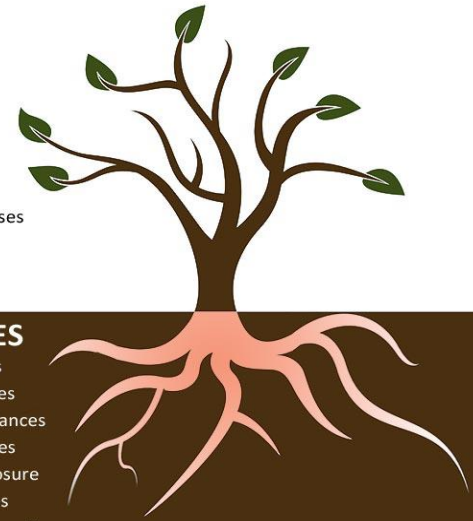


## DISEASES

- 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



Health™