

The Ketogenic Diet – The Latest Fad or Therapeutic Tool?

Dr. Marc Bubbs ND, CISSN, CSCS



Conflicts of Interest

- Nutrition Advisor Totum Sport UK
- Nutrition Advisor Organika Food Inc.
- Author of The Paleo Project

The Ketogenic Diet – Weight Loss, Hypertrophy & Potential Pitfalls

OBJECTIVES

- I. Introduction – World Around Us
- II. What Is A Ketogenic Diet? (Historical/Practical)
- III. Keto Diet & Obesity & Weight Loss
- IV. Keto Diet & Diabetes (Type-2)
- V. Keto Diet & NAFLD-CVD
- VI. Keto Myths
- VII. Potential Pitfalls “Going keto”
- VIII. Coaching – Secret to Clinical Success

I. Introduction



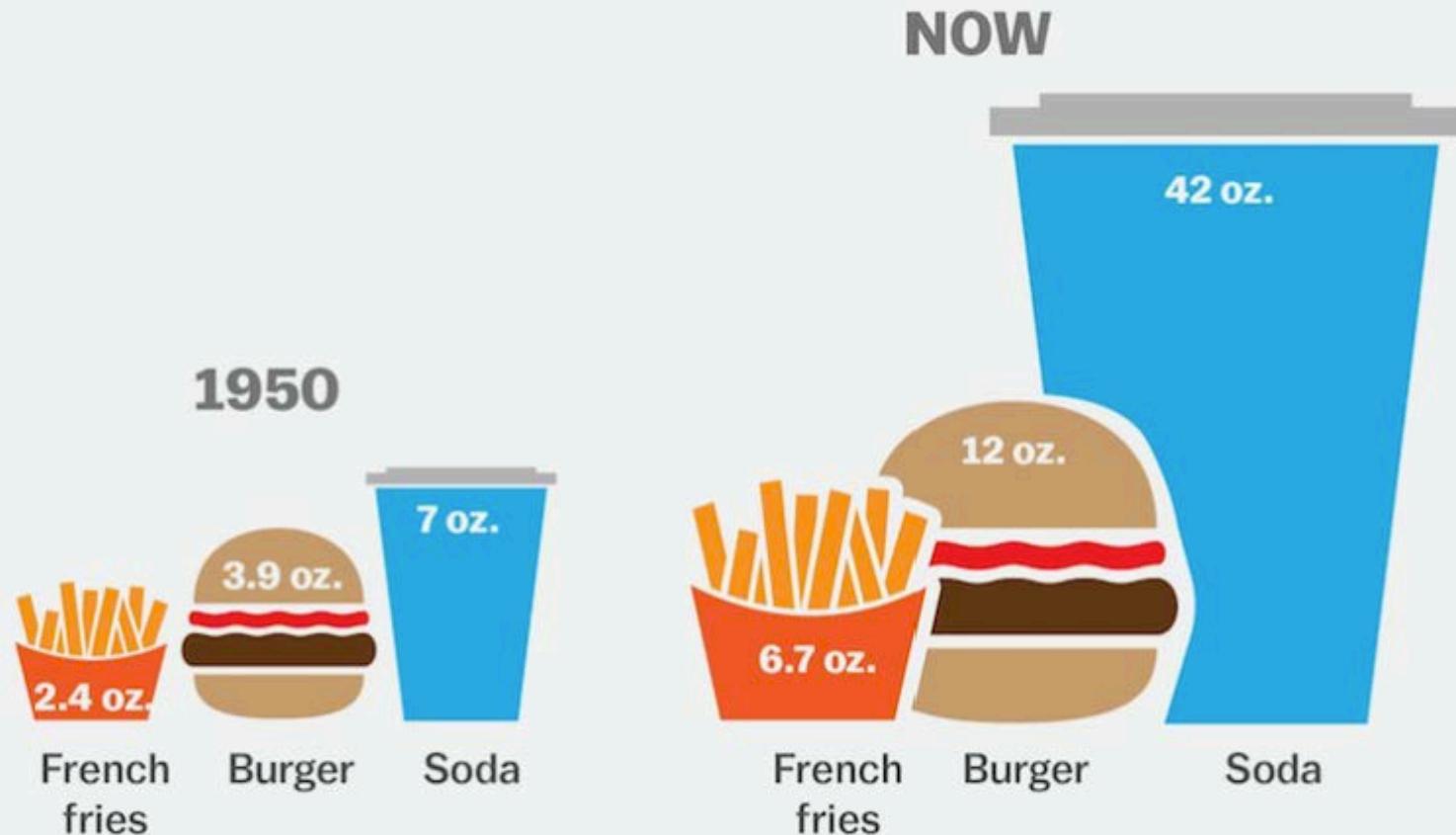
Obesity - 36.5% of US adults

Overweight + Obesity >70% of population

<https://www.cdc.gov/obesity/data/adult.html>

I. Introduction

The average restaurant meal today is more than four times larger than in the 1950s

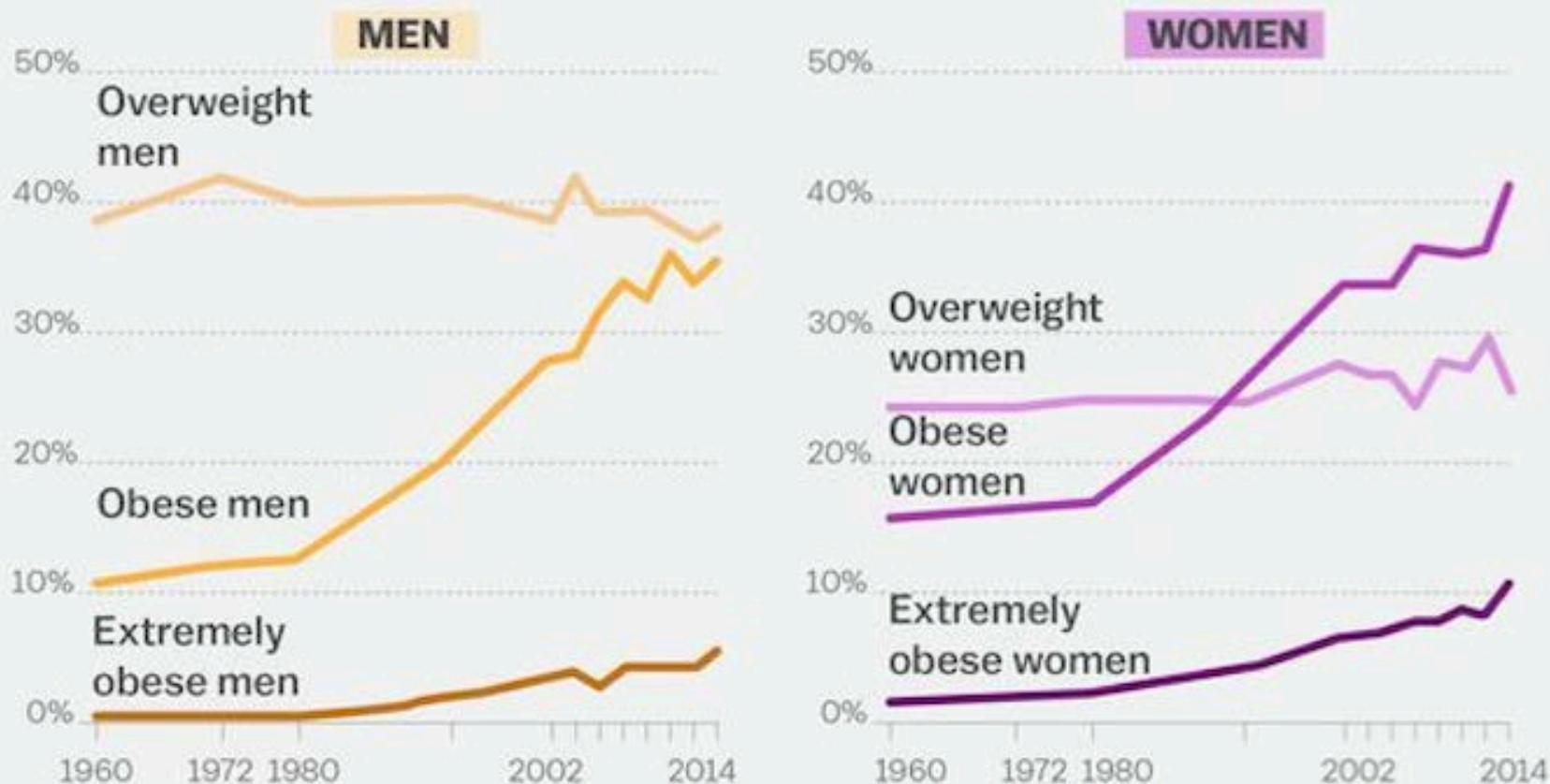


SOURCE: CDC

Vox

I. Introduction

The stunning rise of obesity in America

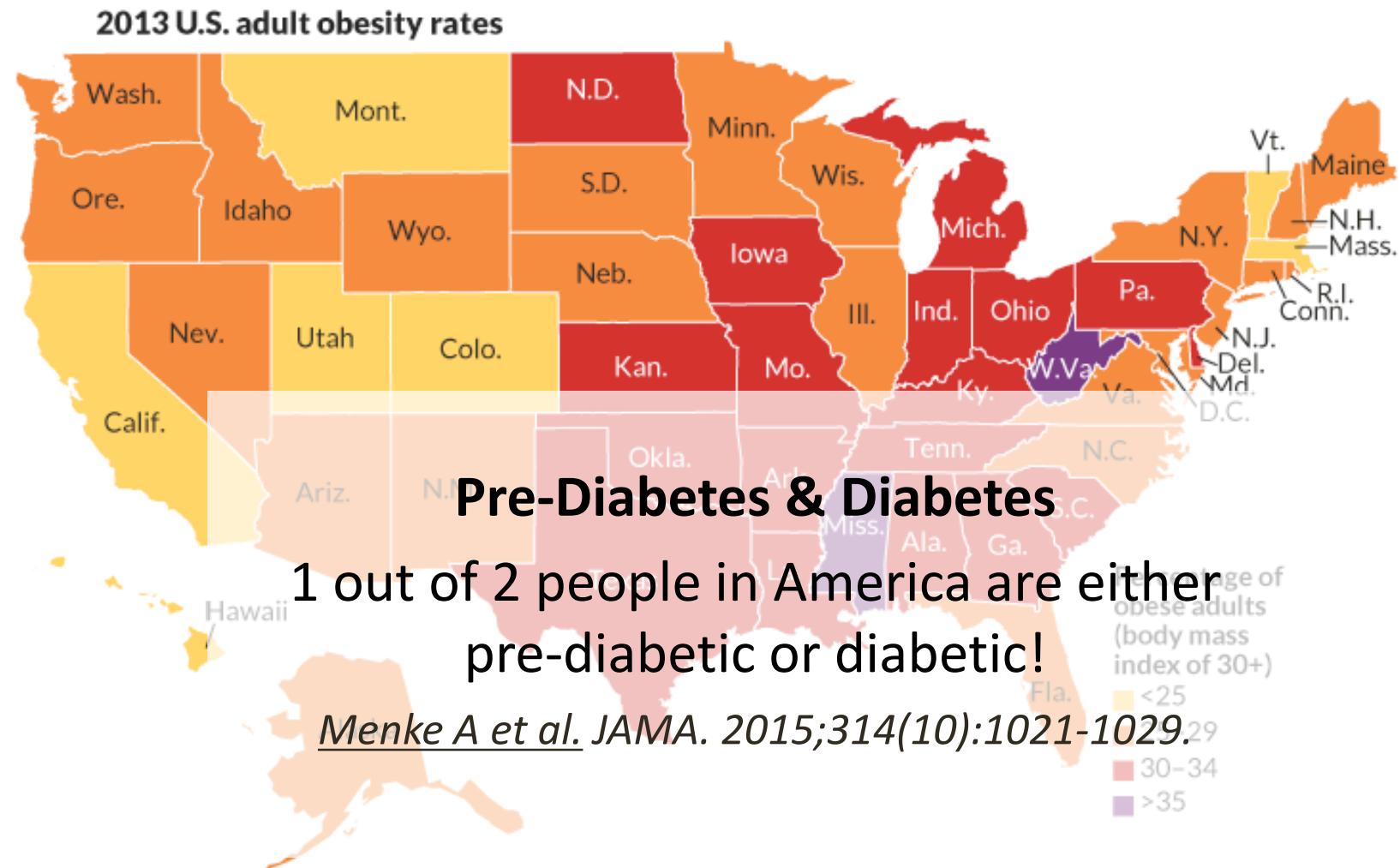


SOURCE: CDC

Vox

I. Introduction

Rates of Pre-Diabetes & Diabetes Today



I. Introduction

Insulin Dysfunction & Heart Health

ISSN 0882-218X/00/0300-0001\$15.00
Printed in U.S.A.

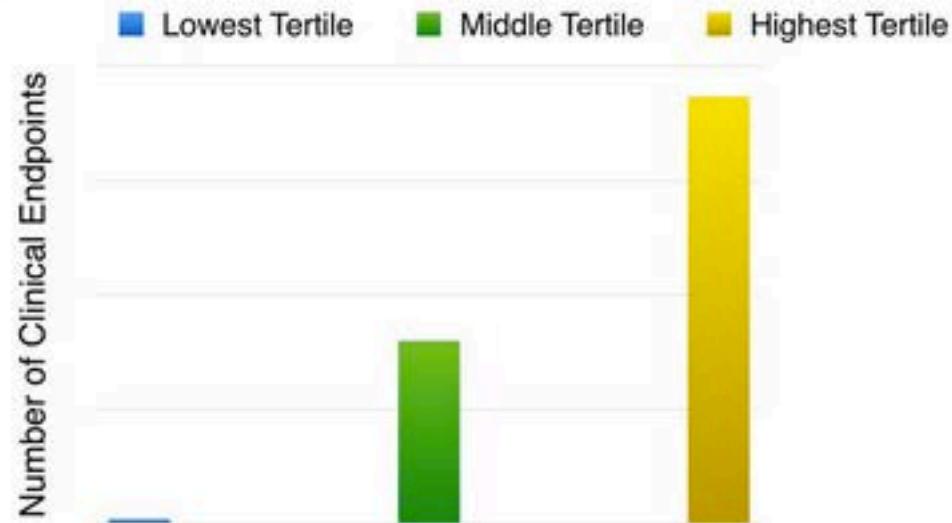
The Journal of Clinical Endocrinology & Metabolism 00(0):000-000
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Insulin Resistance as a Predictor of Age-Related Diseases

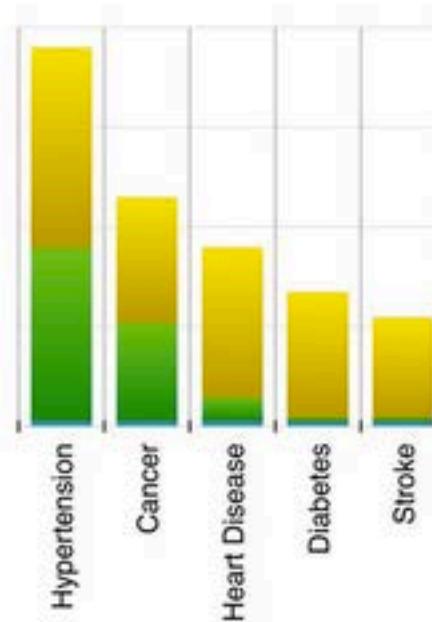
FRANCESCO S. FACCHINI, NANCY HUA, FAHIM ABBASI, AND GERALD M. REAVEN

Departments of Medicine (F.S.F., N.H., F.A., G.M.R.), Stanford University, School of Medicine Stanford, California 94305; and San Francisco General Hospital (F.S.F.), University of California-San Francisco, San Francisco, California 94110

The current study was initiated to evaluate the ability of insulin resistance to predict a variety of age-related diseases. Baseline measurements of insulin resistance and related variables were made between 1988–1995 in 208 apparently healthy, nonobese (body mass index < 30 kg/m²) individuals, who were then evaluated 4–11 yr later (mean ± SEM = 6.3 ± 0.2 yr) for the appearance of the following age-related diseases: hypertension, coronary heart disease, stroke, cancer, and type 2 diabetes. The effect of insulin resistance on the development of clinical events was evaluated by dividing the study group into tertiles of insulin resistance at baseline and comparing the events in these 3 groups. Clinical endpoints ($n = 40$) were identified in 37 individuals (93%) of those evaluated, including 12 with hypertension, 3 with hypertension + type 2 diabetes, 9 with cancer, 7 with coronary heart disease, 4 with stroke, and 2 with type 2 diabetes. Twenty-eight out of the total 40 clinical events were seen in 23 individuals (58%) in the most insulin-resistant tertile, with the other 12 occurring in the group with an intermediate degree of insulin resistance. Furthermore, insulin resistance was an independent predictor of all clinical events, using both multiple logistic regression and Cox's proportional hazards analysis. The fact that an age-related clinical event developed in approximately 1 out of 3 healthy individuals in the upper tertile of insulin resistance at baseline, followed for an average of 6 yr, whereas no clinical events were observed in the most insulin-sensitive tertile, should serve as a strong stimulus to further efforts to define the role of insulin resistance in the genesis of age-related diseases. *J Clin Endocrinol Metab* 86: 3574–3578, 2001



"...no clinical events were observed in the most insulin-sensitive tertile..."



I. Introduction

Insulin Dysfunction & Risk of Low Mood

Diabetes Med 2015

Diabetes-related distress at baseline ***increased the risk*** of elevated depressive symptoms by ***2.56-fold***

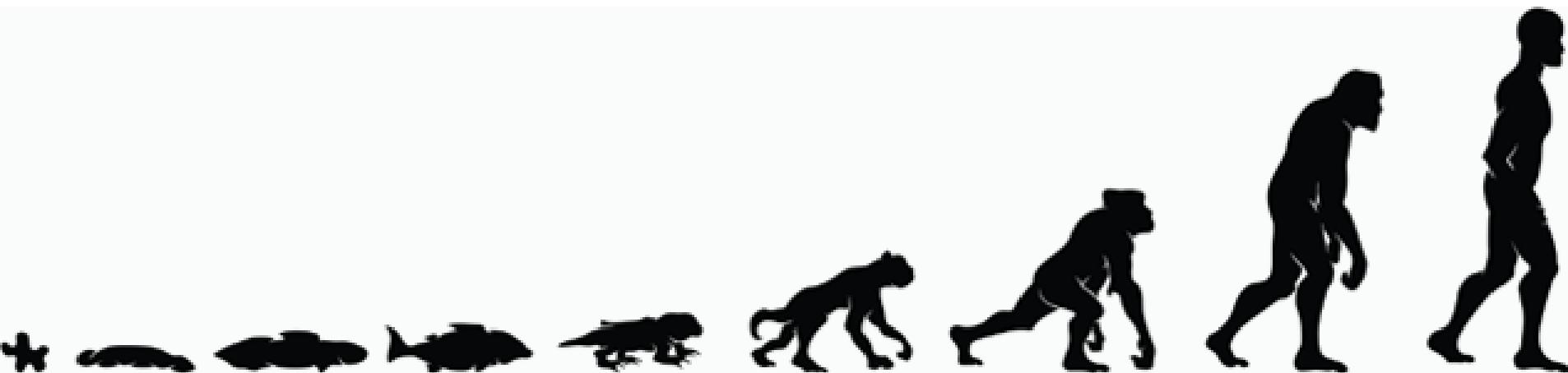
Diabet Med. 2015 Jul 22. doi: 10.1111/dme.12861

**Note - depressive symptoms were identified as an amplifier for diabetes-related distress.*



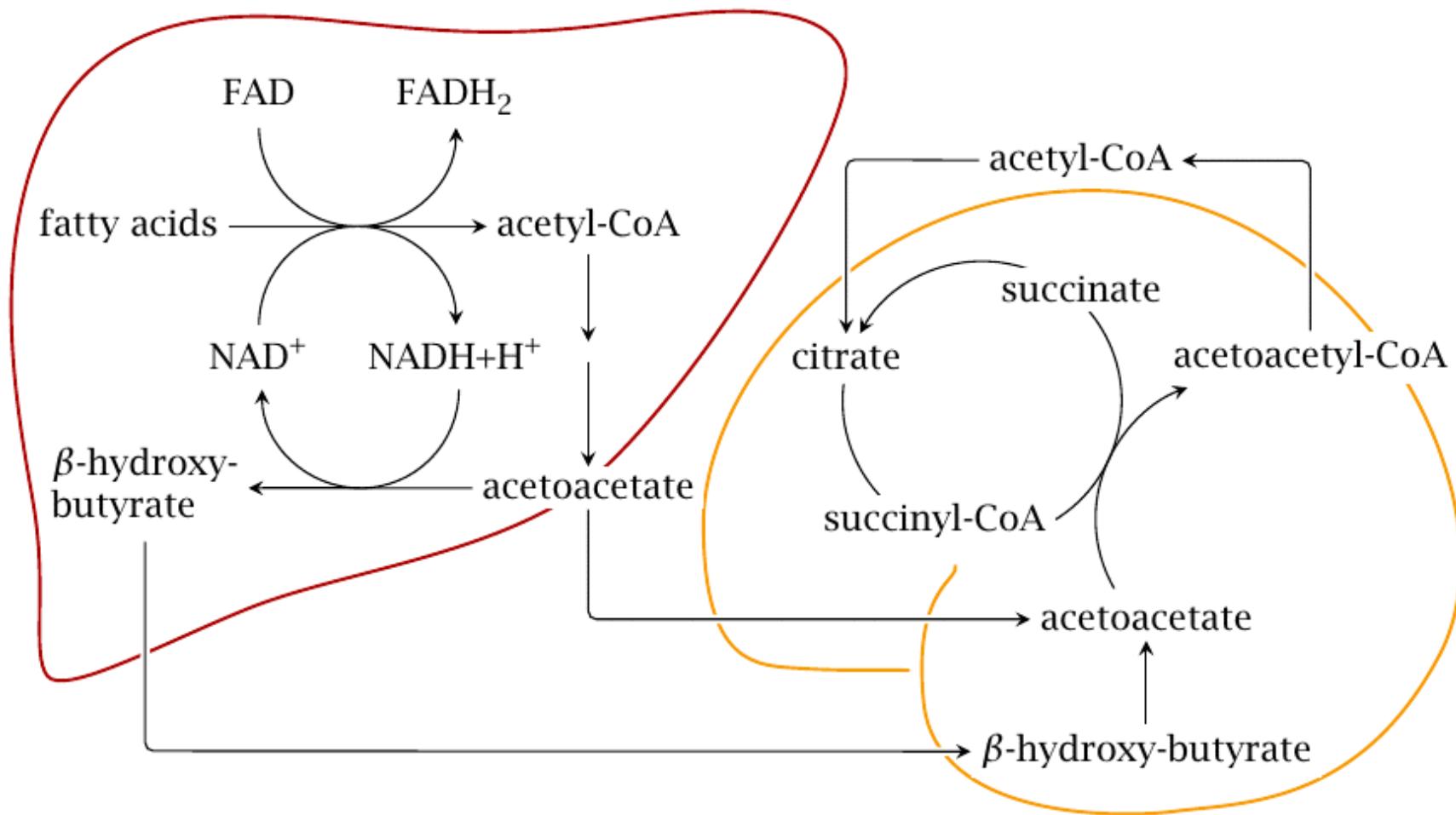
II. What Is A Ketogenic Diet?

Evolution & Human Physiology



II. What Is A Ketogenic Diet?

Ketone Physiology

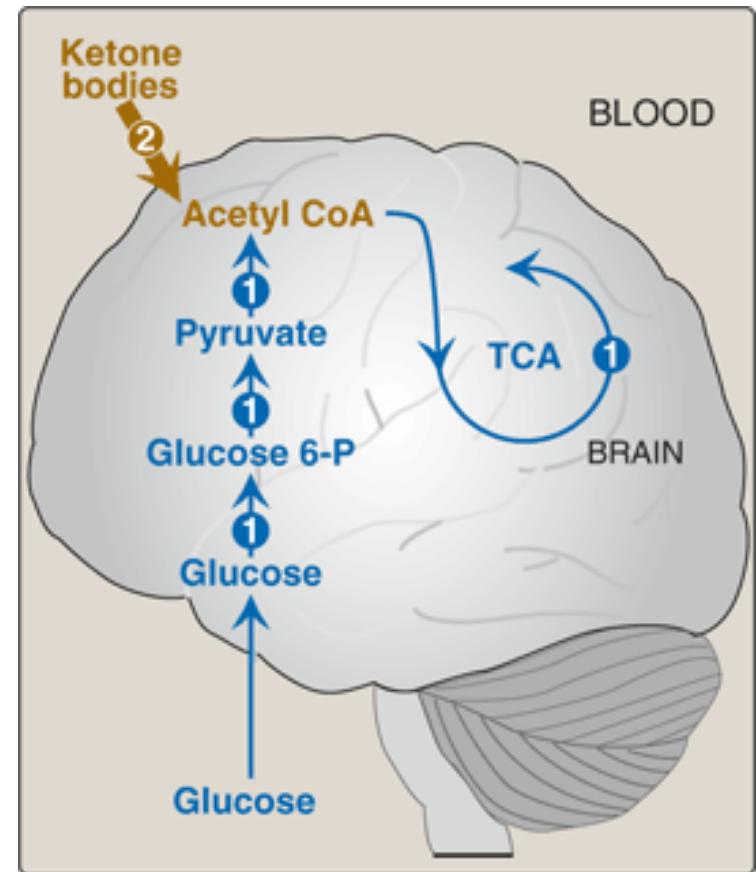


II. What Is A Ketogenic Diet?

Ketone Physiology

Ketone Bodies

- Acetoacetate
 - urine
- Beta-hydroxybutyrate (BHB)
 - blood
- Acetone
 - Breath
- Serve as fuel for brain
- When carb availability is limited



II. What Is A Ketogenic Diet?

Ketone Physiology

Physiology

- Glucose needs brain – 120-140g day
 - ***Is it really “preferred” fuel?***
 - Body can make glucose from...
 - Amino acids
 - Glycerol (x2) from fats
- **Brain can run on ketones**
 - Alzheimer's brain = dysfunctional glucose metabolism
 - Yet can still metabolize ketones w/o problem
 - i.e. fuel for brain (perhaps “superfuel”?)

Trans Am Clin Climatol Assoc. 2003;114:149-61

II. What Is A Ketogenic Diet?

Medical History - Keto Diet & Epilepsy

Galen of Pergamon

Supported the use of an “attenuating diet” in the treatment of mild epilepsy as well as more chronic, severe forms



**130 AD –
Greek Physician**

Cal West Med. 1933 Sep;39(3):169-73.

Can Med Assoc J. 1931 Jan;24(1):106-7.

The Ketogenic Diet in Epilepsy.

AD B.

Epilepsy in Children: With Particular Reference to the Ketogenic Diet.

Cooder HR.

Ann Neurol. 2015 Jul;78(1):77-87. doi: 10.1002/ana.24424. Epub 2015 May 6.

Ketone bodies mediate antiseizure effects through mitochondrial permeability transition.

Kim DY¹, Simeone KA², Simeone TA², Pandya JD³, Wilke JC¹, Ahn Y⁴, Geddes JW³, Sullivan PG³, Rho JM⁴.

Author information

II. What Is A Ketogenic Diet?

Macronutrient Breakdown

TRUE KETOGENIC DIET



75%
FATS



20%
PROTEIN



5%
CARBOHYDRATES

II. What Is A Ketogenic Diet?

Types of Healthy Fats

Saturated Fats

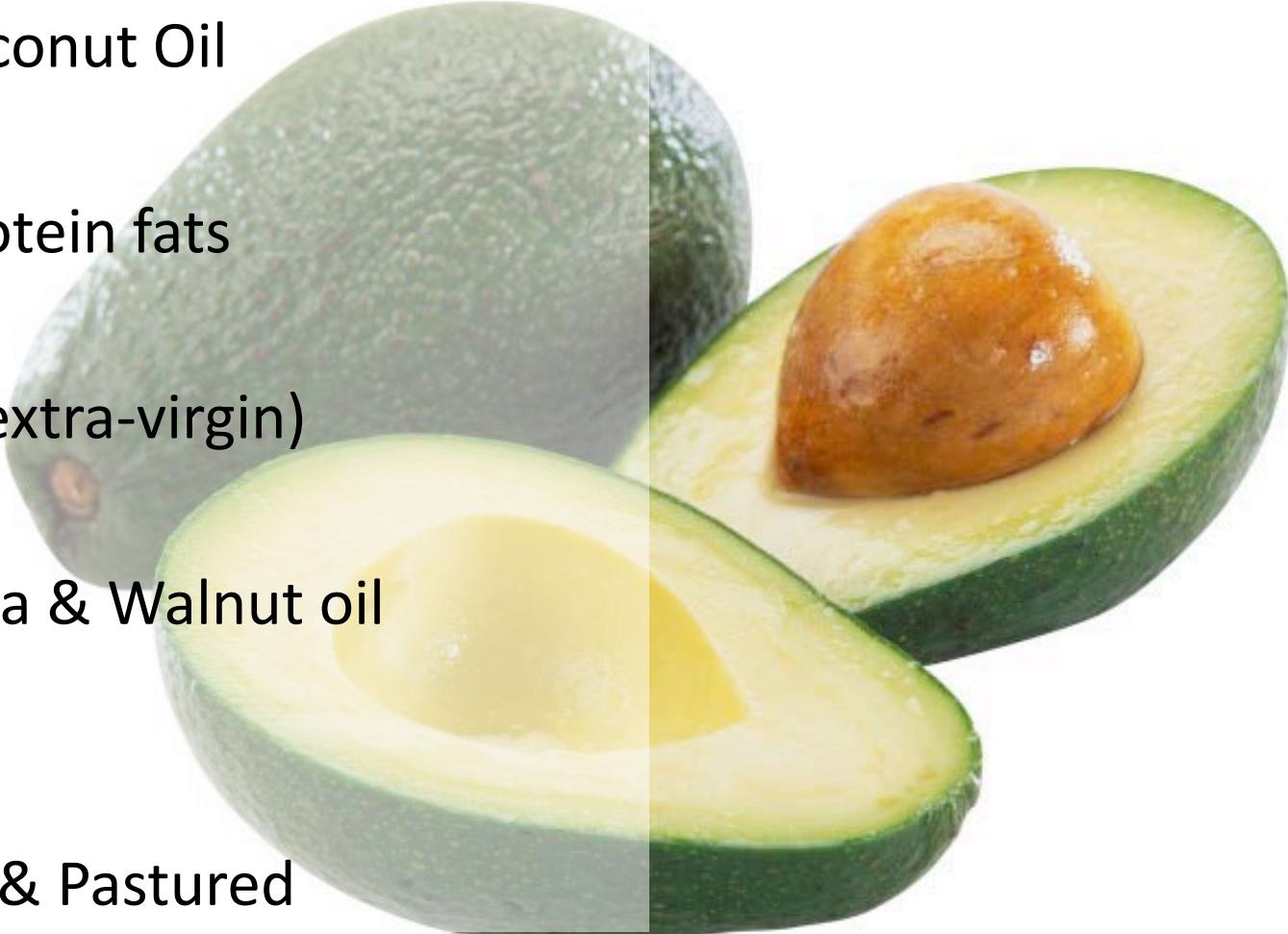
- Butter/Coconut Oil
- Egg yolks
- Animal protein fats

MUFAs*

- Olive Oil (extra-virgin)
- Avocado
- Macadamia & Walnut oil

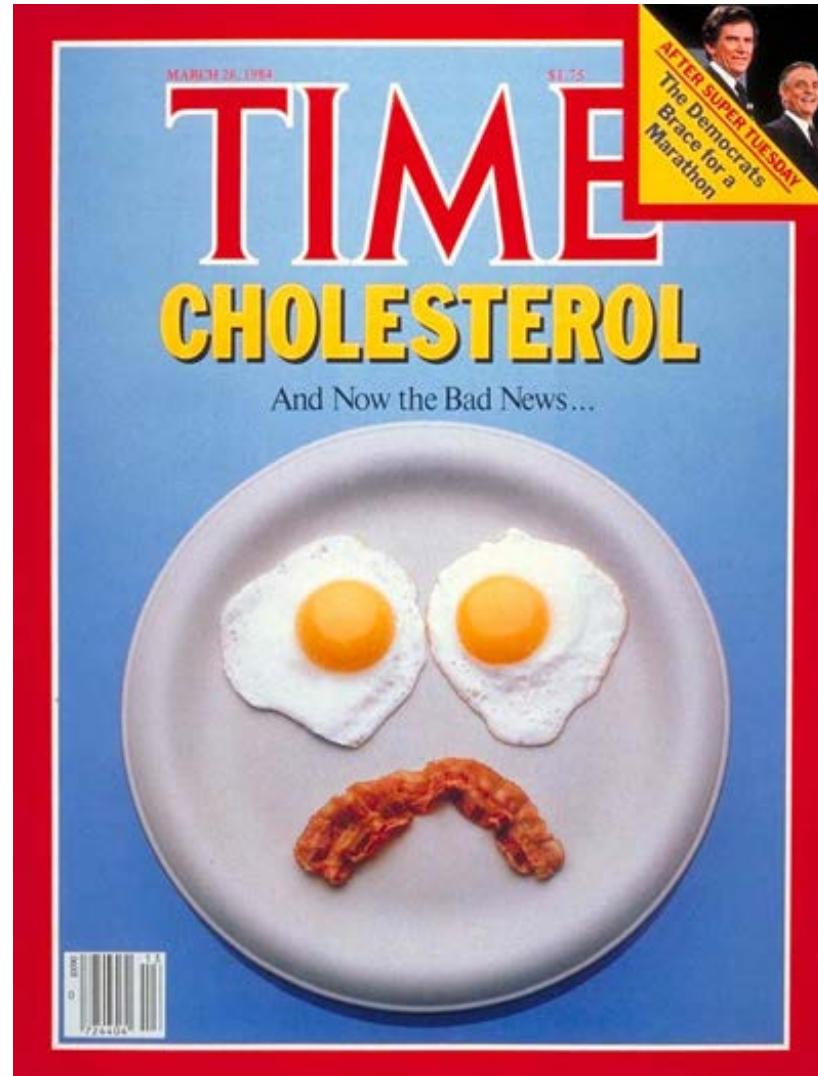
PUFAs

- Fish
- Grass-Fed & Pastured
- Nuts & Seed Oils



II. What Is A Ketogenic Diet?

Fear of Cholesterol



II. What Is A Ketogenic Diet?

Protein

Protein Intake (0.8-1.4g/kg) [RDA – 0.8g/kg]

- ✓ Lean meats – beef, chicken, turkey
- ✓ Wild game meats – bison, venison, elk, etc...
- ✓ Shellfish, seafood, fish
- ✓ Eggs, dairy
- ✓ Vegan – Tempeh, tofu**
- ✓ Supplements – whey, rice/pea

**Ketogenic Diet – be mindful protein intake*

** *Ageing & Protein (Stu Phillips PhD)*

II. What Is A Ketogenic Diet?

Very Low Carb

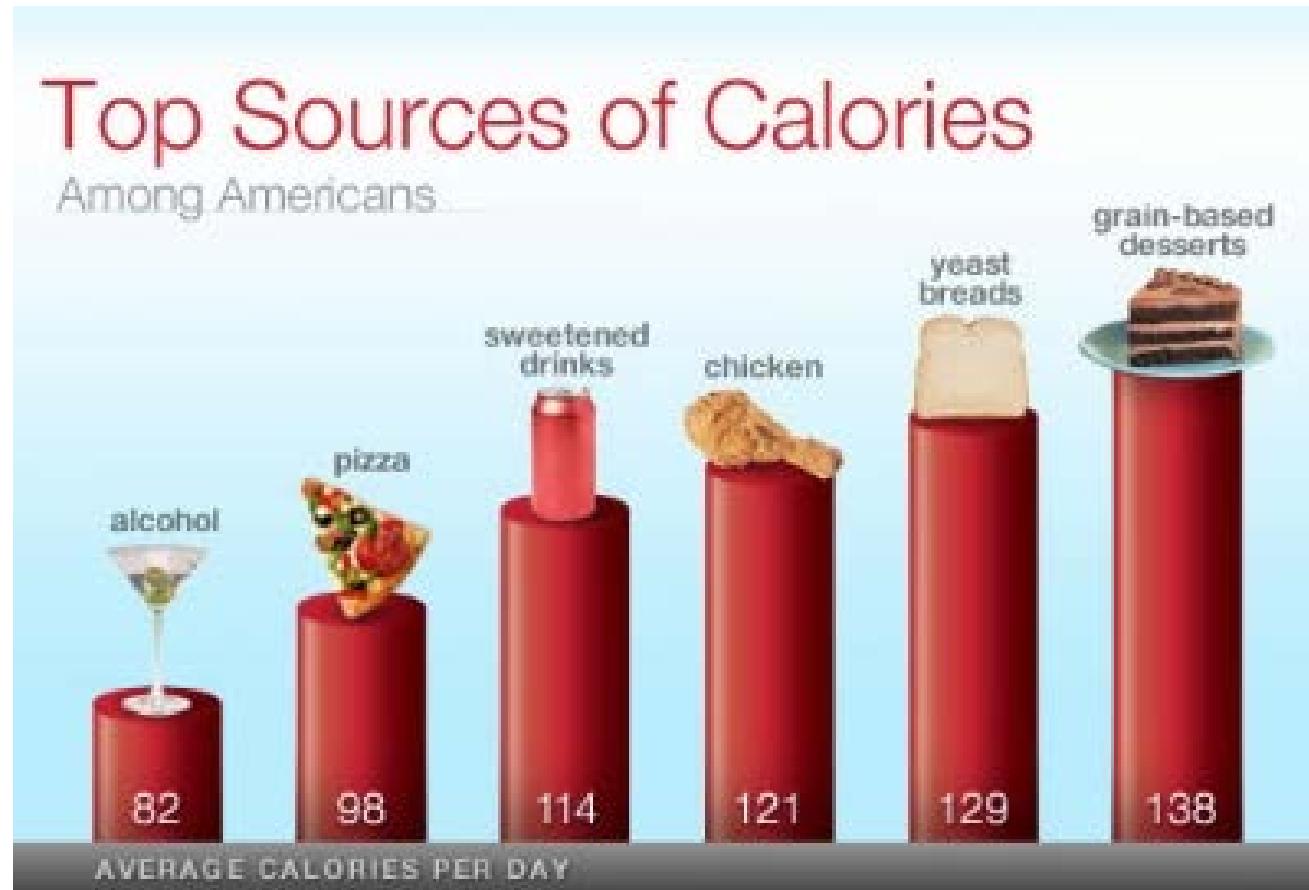
Eliminate/Reduce Starchy Carbs

- ✓ No processed carbs
- ✓ No sugars
- ✓ Limited complex carbs
- ✓ Limited fruit
- ✓ Limited root veggies & tubers

DOSE – 20-30g/day “effective carbs”

Coaching Take-Home – eliminates processed foods

Coaching Cue – What Foods Eliminated?



II. What Is A Ketogenic Diet?

Carbs To Include... Vegetables

Veggies + Leafy Greens

- ✓ All leafy greens
- ✓ Cruciferous veggies
- ✓ Limited 'root' veggies (i.e. carrots, parnips, beets, etc.)

Coaching Take-Home – steers clients to vegetables!



II. What Is A Ketogenic Diet?

Carbs To Include... Fruit

Limited Fruit

- Typically berries best
- i.e. Raspberries/Blackberries
 - Carbs (1 cup) – 15g
 - Fiber (1 cup) – 8g
 - Effective Carbs – 7g



II. What Is A Ketogenic Diet?

Carbs To Include...

Carbs - Fiber = Effective Carbs

e.g. Lentils

- ✓ Carbs - 20g per $\frac{1}{2}$ cup
- ✓ Fiber - 8g per $\frac{1}{2}$ cup
 - EFFECTIVE CARBS =
 - $20-8 = 12g$



II. A Ketogenic Diet

Nutrition Strategy – Why ?

- Caloric deficit achieved (often dramatic)*
- Eliminates processed food
- Increases protein intake (compared to RDA)
- Increases vegetable intake
- Increases MUFA intake
- Reduces trans-fats

BUT – DO YOU NEED TO BE “KETO” TO ACHIEVE THIS?

II. What Is A Ketogenic Diet

Testing Considerations

[Nutr Metab \(Lond\)](#). 2016; 13: 77.

Published online 2016 Nov 4. doi: [10.1186/s12986-016-0136-4](https://doi.org/10.1186/s12986-016-0136-4)

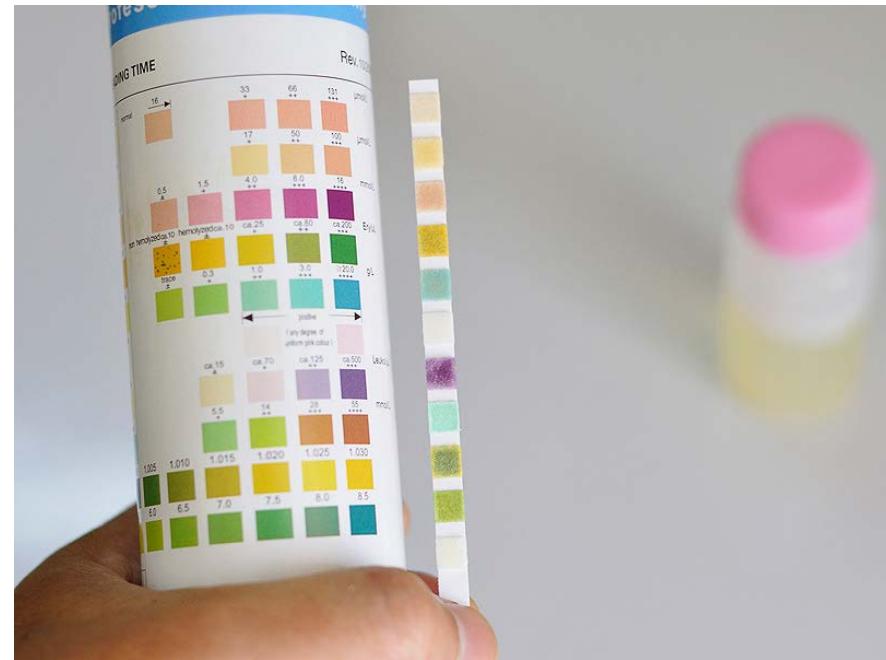
PMCID: PMC5097355

Monitoring for compliance with a ketogenic diet: what is the best time of day to test for urinary ketosis?

Paul Urbain[✉] and Hartmut Bertz

1) URINE TESTING

- Most common method
- Acetoacetate
- Short-term
- *Compliance**
- Least favourable -10:00 till 18:00
 - meals
 - physical activity



Conclusions

These results indicate that ketonuria in subjects with stable ketosis is highest and can be most reliably detected in the early morning and post-dinner urine. Recommendations can be given regarding precise time of the day for measuring ketone bodies in urine in future studies with KDs.

II. What Is A Ketogenic Diet

Testing Considerations – Con't

2) Blood Test Strip (BHB)

- ✓ Higher fidelity > urine
- ✓ More precise
- ✓ More expensive
- ✓ Short-term to mid-term

Am J Physiol Endocrinol Metab. 2005 Aug; 289(2):E306-12.



3) Keto Breath Tester

- ✓ Higher fidelity > urine
- ✓ Precision = Blood > Urine
- ✓ More expensive
- ✓ Short-term-mid-term

Am J Clin Nutr. 2002 Jul; 76(1):65-70



II. What Is A Ketogenic Diet

Variations In Keto Approaches

Cyclic Ketogenic Diet - CKD

- 1-2 days per week (refeed)
- *I.e. 5-6 Days Keto + 1-2 Days Mod/High Carb*

Targeted Ketogenic Diet - TKD

- Daily or multi-day per week -
- *I.e. dosing AROUND exercise*



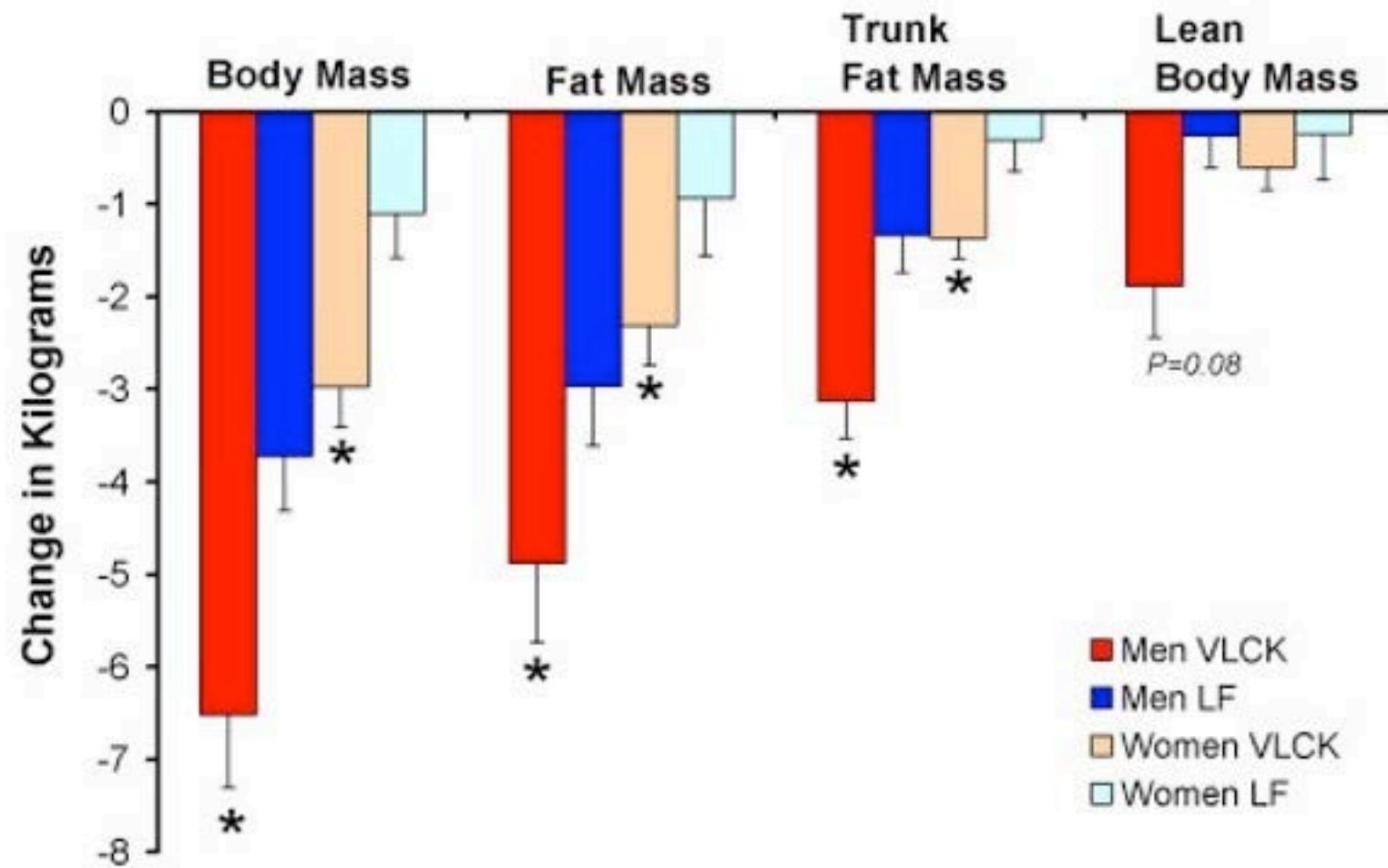
III. Keto Diet & Weight Loss



III. Keto Diet & Weight Loss

Am. J Clinical Nutrition 2004

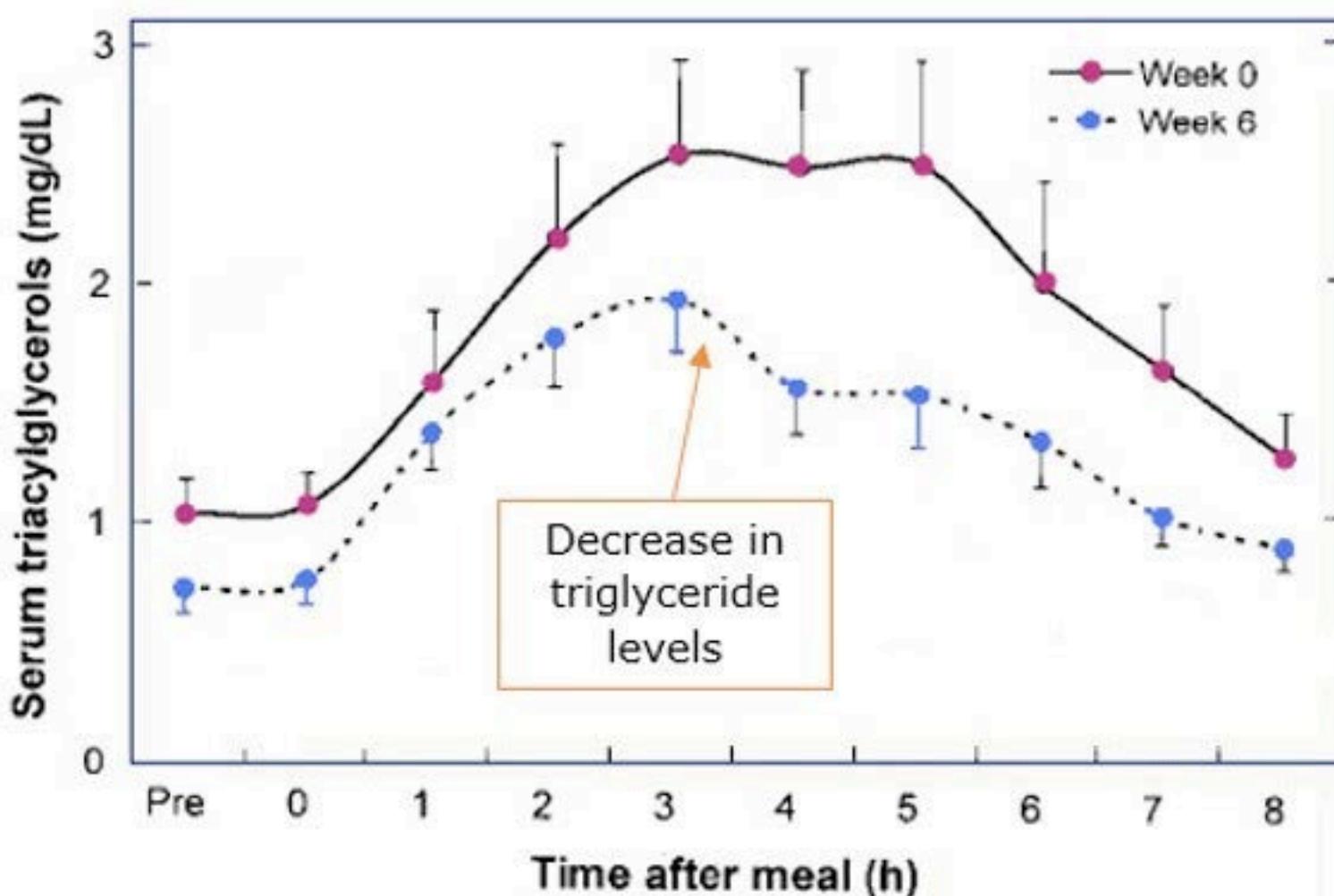
– Very Low-Carb vs. Low-Fat in Overweight Men & Women



III. Keto Diet & Weight Loss

Am. J Clinical Nutrition 2004

– Very Low-Carb vs. Low-Fat – TRIGLYCERIDES



III. Keto Diet & Weight Loss

(Aside – Mechanisms: Triglycerides & Satiety)

Int J Obes (Lond). 2017 Oct 9. doi: 10.1038/ijo.2017.231. [Epub ahead of print]

Triglycerides cross the blood-brain barrier and induce central leptin and insulin receptor resistance.

Banks WA^{1,2}, Farr SA^{3,4}, Salameh TS^{1,2}, Niehoff ML³, Rhea EM^{1,2}, Morley JE⁴, Hanson AJ^{1,2}, Hansen KM^{1,2}, Craft S⁵.

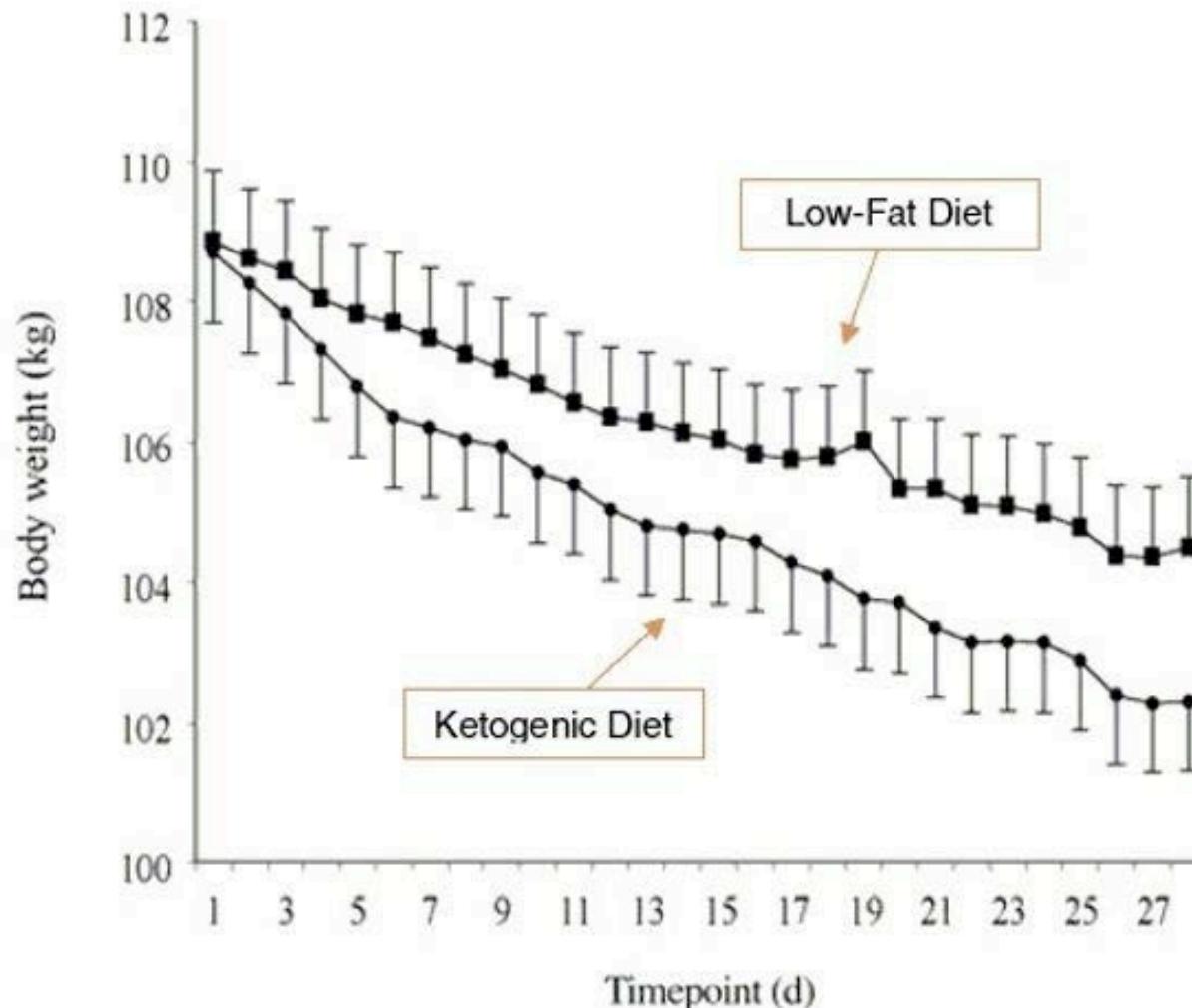
 Author information

CONCLUSIONS: Triglycerides cross the blood-brain barrier rapidly, are found in human cerebrospinal fluid, and induce central leptin and insulin receptor resistance, decreasing satiety and cognition. International Journal of Obesity advance online publication, 31 October 2017; doi:10.1038/ijo.2017.231.

III. Keto Diet & Weight Loss

Ad libidum vs. Calorie Controlled Low-Fat Obese Men

Am. J Clinical Nutrition 2008



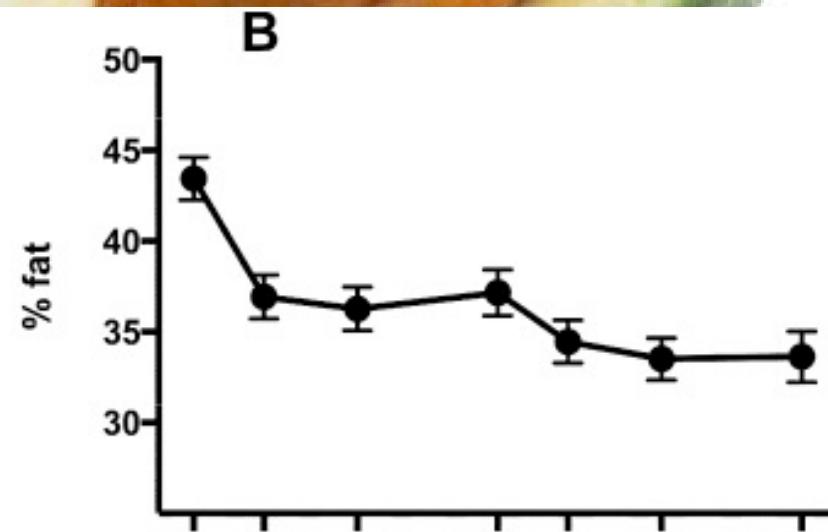
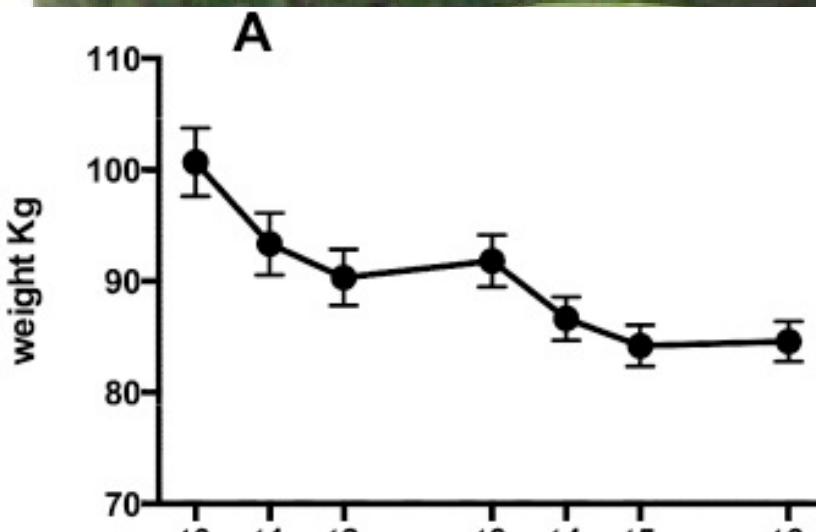
III. Keto Diet & Weight Loss

Nutrients Journal 2013 – 6 Months

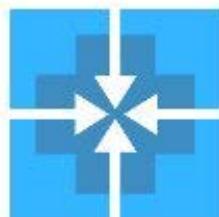
Study 2009 - Results

- ↓ 20-35 lbs weight loss
- ↓ LDL Cholesterol
- ↓ Triglycerides
- ↓ Insulin
- ↓ Glucose levels

*Paoli et al. Nutrients 2013 Dec
18;5(12):5205-17*



III. Keto Diet (Low-Carb) For Weight Loss

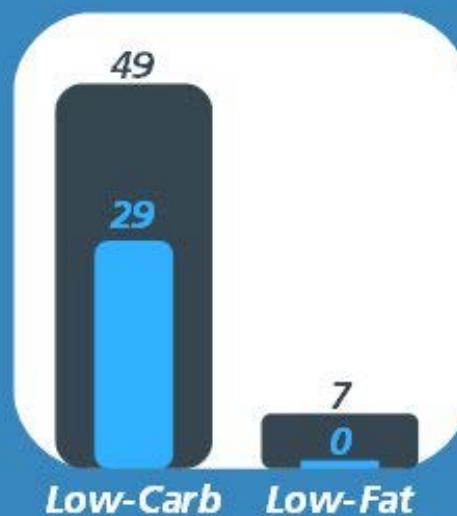


**Public Health
Collaboration**

*Informing
Healthy
Decisions*

*Find out more @
www.PHCuk.org/RCTs*

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



*58 RCTs In Total
(2 Are Equal)*



Greater Weight Loss



Significantly Greater Weight Loss Between Groups

III. Keto Diet (Low-Carb) For Weight Loss

1-Year – Low-Carb vs. Low-Fat

Original Investigation

February 20, 2018

Effect of Low-Fat vs Low-Carbohydrate Diet on 12-Month Weight Loss in Overweight Adults and the Association With Genotype Pattern or Insulin Secretion

The DIETFITS Randomized Clinical Trial

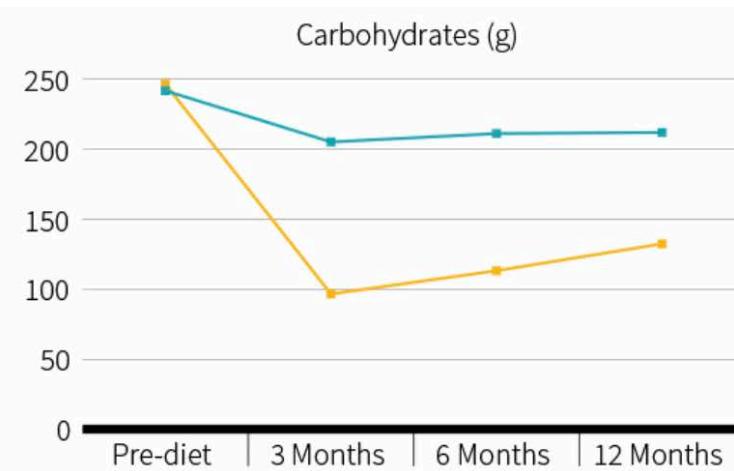
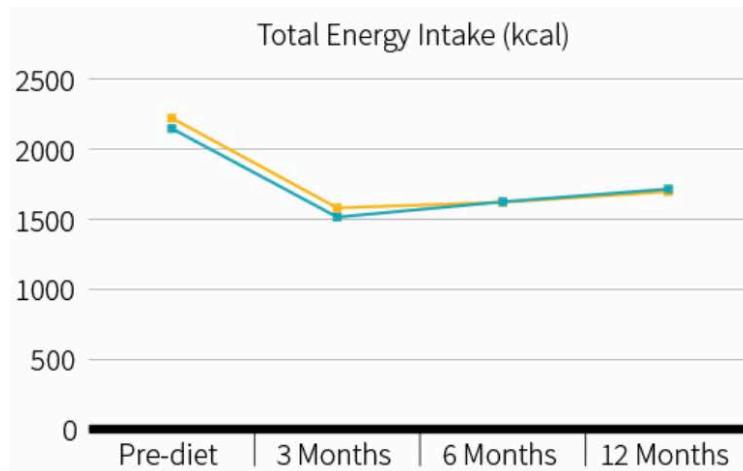
Christopher D. Gardner, PhD¹; John F. Trepanowski, PhD¹; Liana C. Del Gobbo, PhD¹; et al

» Author Affiliations

JAMA. 2018;319(7):667-679. doi:10.1001/jama.2018.0245

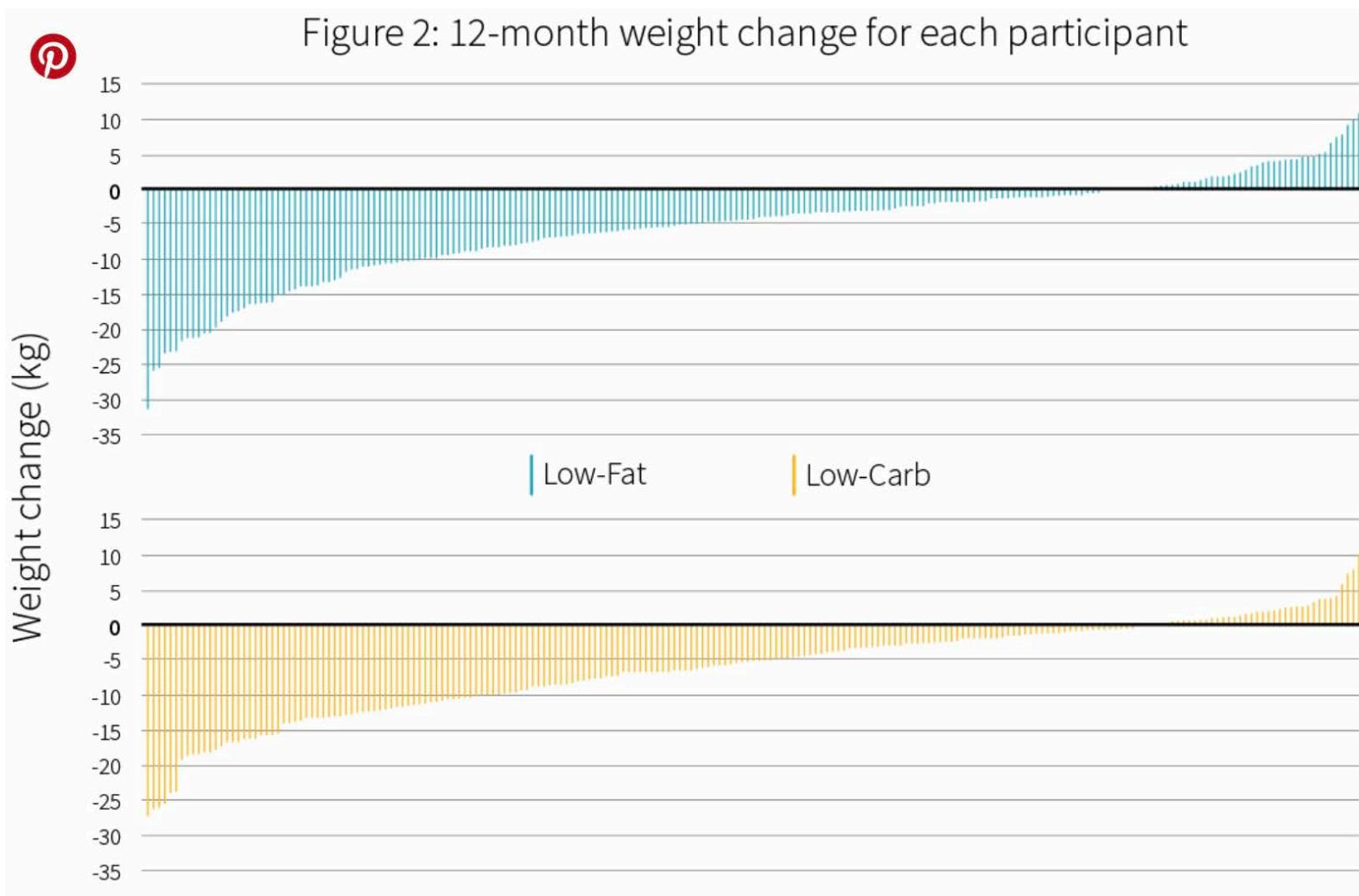
III. Keto Diet (Low-Carb) For Weight Loss

1-Year – Low-Carb vs. Low-Fat



III. Keto Diet (Low-Carb) For Weight Loss

1-Year – Low-Carb vs. Low-Fat



III. Keto Diet & Obesity

How Does It Work – Proposed Mechanisms

- ✓ Reduced **caloric intake**¹
- ✓ Increased **satiety effect of proteins**¹
- ✓ Use of **energy from proteins** in KD is an expensive process (thus increases weight loss)^{3,4}
- ✓ **Metabolic effect**²
- ✓ Gluconeogenesis (w carb restriction) is **energy demanding**⁵
- ✓ **Decreased appetite induced by ketosis**⁶

1) *Annu Rev Nutr.* 2009; 29():21-41

2) *Nutr Metab (Lond).* 2004 Dec 8; 1(1):15

3) *Theor Biol Med Model.* 2007 Jul 30; 4():27

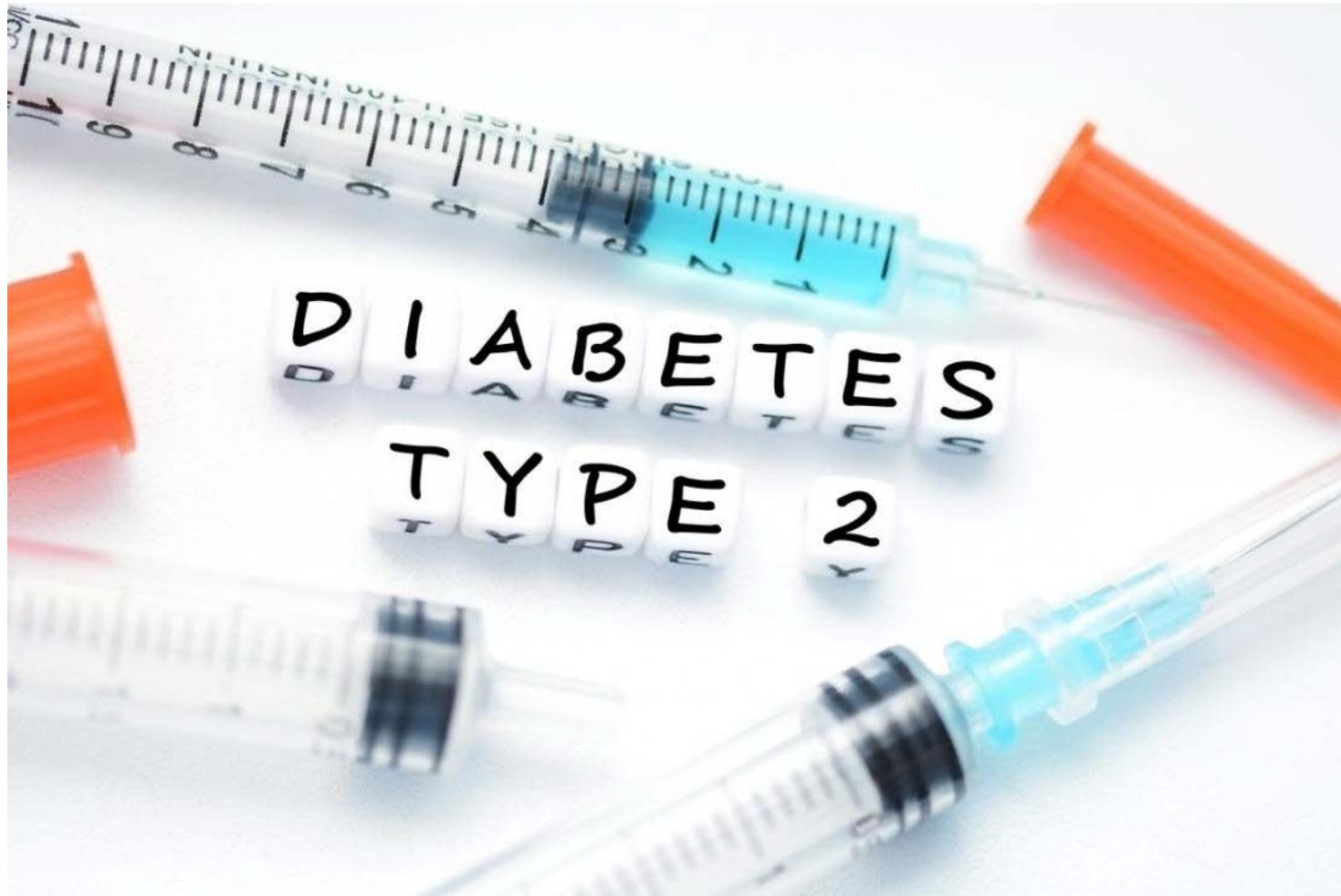
4) *J Am Coll Nutr.* 2004 Oct; 23(5):373-85

5) *J Am Coll Nutr.* 2004 Oct; 23(5):373-85

6) *Eur. J. Clin. Nutr.* 2013;67:759–764.



IV. Keto Diet & Diabetes (type-2)



IV. Keto Diet & Diabetes (type-2)

Ketogenic Diet frequently associated with following improvements in DMT2...

- *blood glucose levels*^{1,2,3,4}
- *glycosylated hemoglobin (HbA1c)*^{1,2,3,4}
- *insulin sensitivity*^{3,5}
 - *sometimes without weight loss*⁶



1) *Cardiovasc. Prev.* 2015;22:389–394

2) *Nutrition.* 2012;28:1016–1021

3) *Ann. Intern. Med.* 2005;142:403–411

4) *Diabetes Obes. Metab.* 2014;16:90–93.

5) *N. Engl. J. Med.* 2003;348:2074–2081

6) *Nutr. Metab.* 2006;3:16.

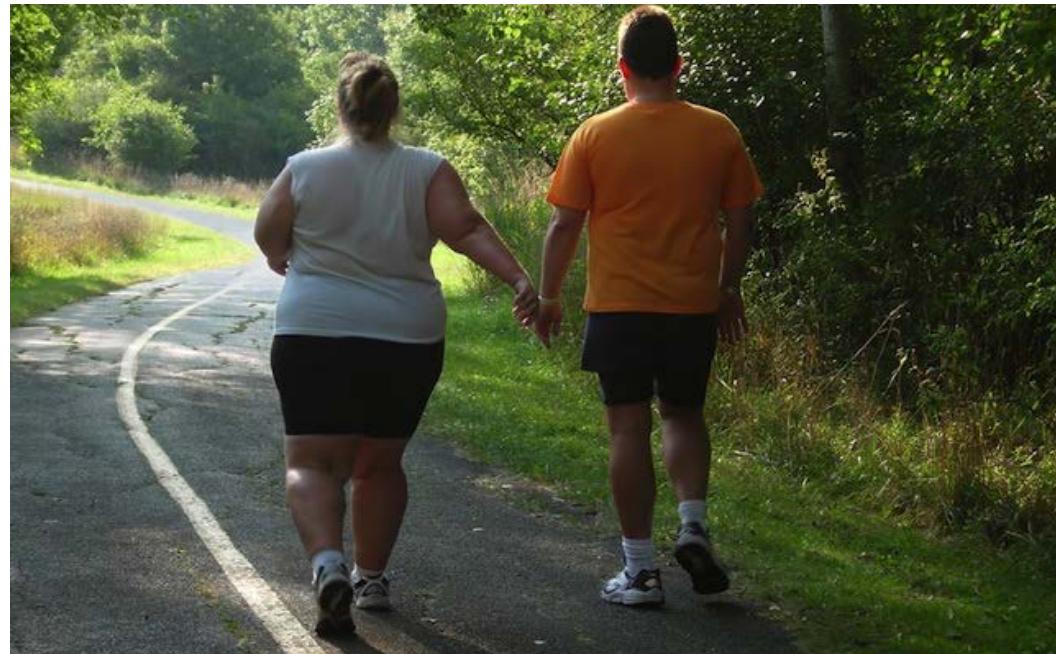
IV. Keto Diet & Diabetes (type-2)

BENEFITS IN SHORT-TERM – Research Supports

- ✓ considerable **weight loss**
- ✓ improved **beta-cell function**
- ✓ improved **quality of life** associated with short-term

Nutrients. 2017 May; 9(5): 517.

Nutr Diabetes. 2016 Sep; 6(9): e230.



IV. Keto Diet & Diabetes (type-2)

BENEFITS OF INCREASED PROTEIN INTAKE

- ✓ high-protein diets may help promote weight loss
- ✓ maintain lean body mass
- ✓ improve lipid and plasma glucose profiles in obese subjects with or without T2DM

J Nutr 2005; 135: 1903–1910.

Int J Obes (Lond) 2009; 33: 296–304.

Am J Clin Nutr 2008; 87: 1571S–1575S.

J Cardiovasc Nurs 2009; 24: 207–215.



IV. Keto Diet & Diabetes (type-2)

Is High Protein Dangerous to the Kidneys?

“Our data show that a 30–53% daily caloric content as protein does not result in increased appearance or worsening of albuminuria, nor deterioration of plasma creatinine over the course of a 4-month intervention, neither changes in eGFR in T2DM subjects with or without albuminuria but without chronic kidney disease at baseline.”

Cochrane Database Syst Rev 2007; CD002181.

Diabetes Care 2013; 36: 2225–2232.

Protein Dose in Study –

1.0–1.6 g/kg/day.

(RDA – 0.8g/kg/day)*



IV. Keto Diet & Diabetes (type-2)

Real World Scenario

Patient “X” - 80kg male (2,500 kcal per day)

- RDA Protein - 0.8g/kg
 - 64g protein per day = 256 kcal
- RDA Fat – 20-30%
 - = 500-750 kcal
- Carbs - ?
 - What's left? - 1,750 – 1,500
 - EQUALS 375- 437g PER DAY!



IV. Keto Diet & Diabetes (type-2)

JMIR DIABETES

McKenzie et al

Original Paper

A Novel Intervention Including Individualized Nutritional Recommendations Reduces Hemoglobin A1c Level, Medication Use, and Weight in Type 2 Diabetes

Amy L McKenzie¹, PhD; Sarah J Hallberg^{1,2}, DO, MS; Brent C Creighton¹, PhD; Brittanie M Volk¹, RD, PhD; Theresa M Link¹, RD, CDE; Marcy K Abner¹, RD; Roberta M Glon¹, RN, BSN; James P McCarter¹, MD, PhD; Jeff S Volek¹, RD, PhD; Stephen D Phinney¹, MD, PhD

¹Virta Health, San Francisco, CA, United States

²Indiana University Health Arnett, Medically Supervised Weight Loss, Lafayette, IN, United States

Abstract

Background: Type 2 diabetes (T2D) is typically managed with a reduced fat diet plus glucose-lowering medications, the latter often promoting weight gain.

Objective: We evaluated whether individuals with T2D could be taught by either on-site group or remote means to sustain adequate carbohydrate restriction to achieve nutritional ketosis as part of a comprehensive intervention, thereby improving glycemic control, decreasing medication use, and allowing clinically relevant weight loss.

Methods: This study was a nonrandomized, parallel arm, outpatient intervention. Adults with T2D (N=262; mean age 54, SD 8, years; mean body mass index 41, SD 8, kg·m⁻²; 66.8% (175/262) women) were enrolled in an outpatient protocol providing intensive nutrition and behavioral counseling, digital coaching and education platform, and physician-guided medication management. A total of 238 participants completed the first 10 weeks. Body weight, capillary blood glucose, and beta-hydroxybutyrate (BOHB) levels were recorded daily using a mobile interface. Hemoglobin A_{1c} (HbA_{1c}) and related biomarkers of T2D were evaluated at baseline and 10-week follow-up.

IV. Keto Diet & Diabetes (type-2)

Reversing type 2 diabetes with the Virta Treatment

Our clinical trial results show that the Virta Treatment safely and sustainably reverses type 2 diabetes and other chronic metabolic diseases.



1-year clinical trial results

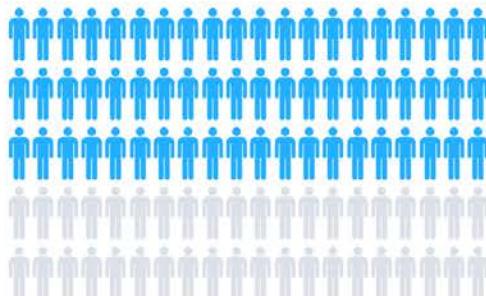
Peer-reviewed

83% patient retention

Diabetes Reversal

60%

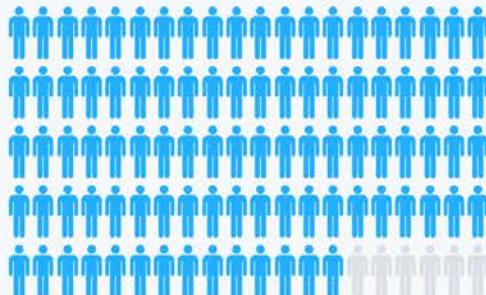
of patients reversed their type 2 diabetes



Medication Reductions

94%

of patients reduced or eliminated insulin



Blood Glucose Improvement

▼ 1.3%

Average A1c reduction at one year



Weight Loss

▼ 30 lbs

Average weight loss at one year

Adapted from Hallberg et al.
Diabetes Ther. 2018;
DOI:10.1007/s13300-018-0373-9



Benefits Beyond Diabetes Reversal

The Virta Treatment improves other chronic metabolic diseases, too.



Decreased Risk of Heart Disease



Lower Blood Pressure



Reduced Inflammation

See full results at
virtahealth.com

IV. Keto Diet & Diabetes (type-2)

American Diabetes Association - recommended daily allowance for digestible carbohydrate is 130 g per day.

Diabetes Care 2013; 36(Suppl 1): S4–S10



Lower Carbs = Better Insulin (Systematic Review)

Short-term studies - reducing total carbohydrate intake is associated with improved insulin sensitivity and glycemic control.

Diabetes Care 2012; 35: 434–445.

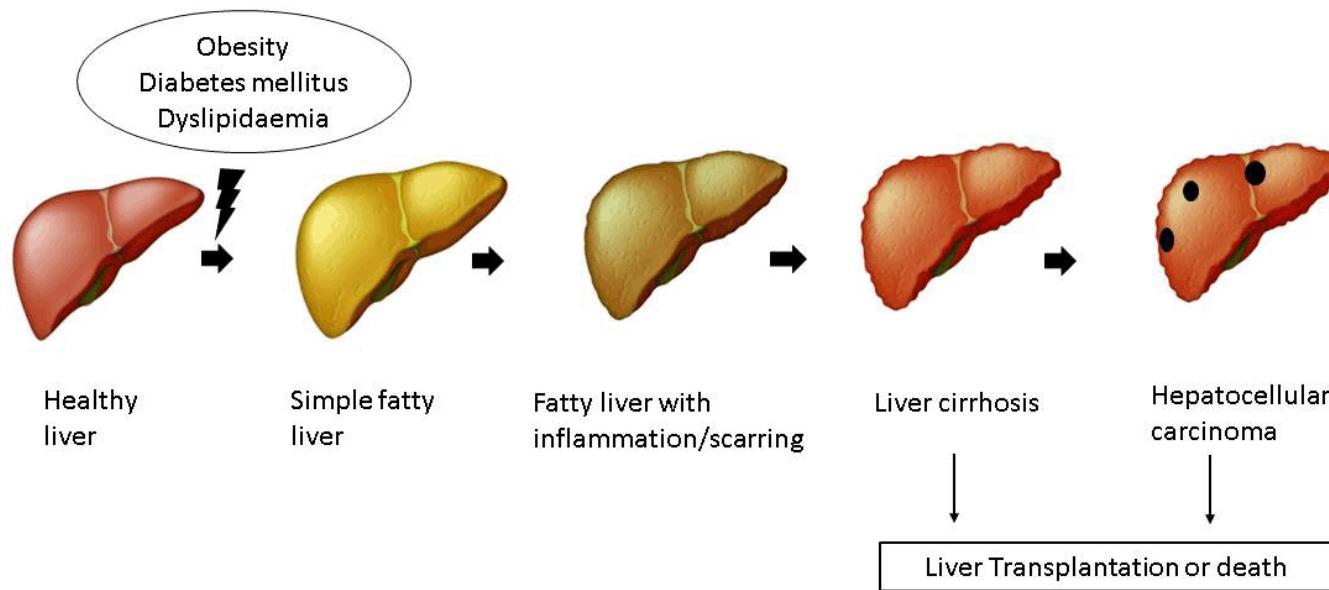
V. Obesity, Diabetes (type-2) & CVD



V. Keto Diet & NAFLD

“Insulin resistance is frequently associated with ectopic lipid accumulation, notably in the liver and skeletal muscle. This can lead to the development of nonalcoholic fatty liver disease (NAFLD) which is an independent predictor of cardiovascular disease.”

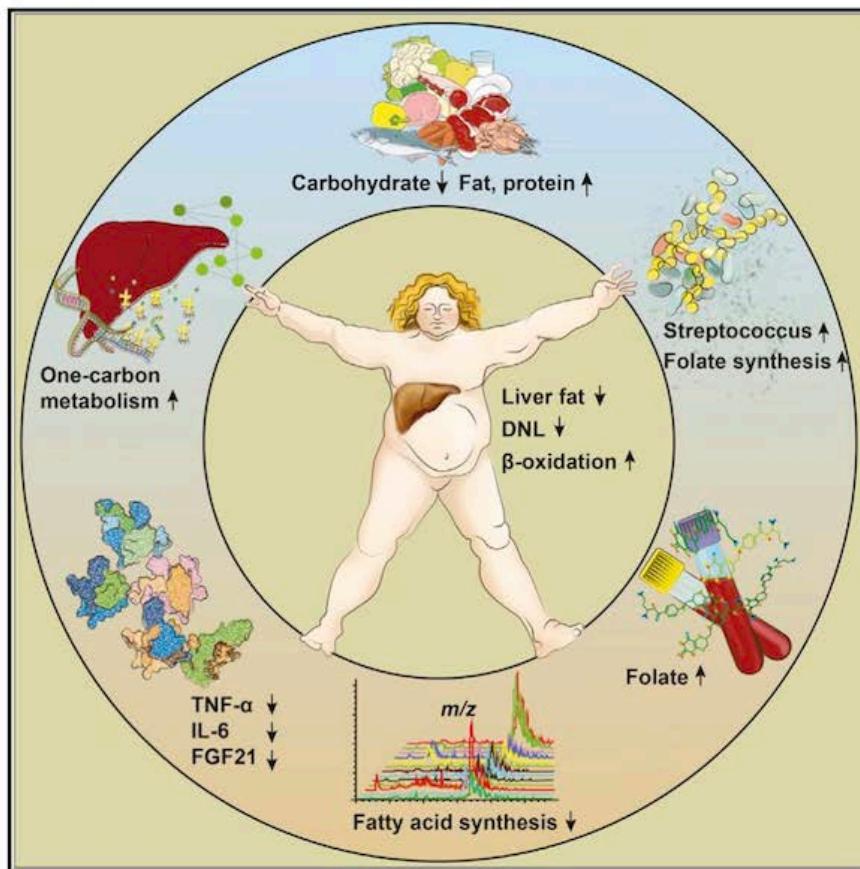
- *Hepatology. 2010 Feb; 51(2):679-89.*



Cell Metabolism

An Integrated Understanding of the Rapid Metabolic Benefits of a Carbohydrate-Restricted Diet on Hepatic Steatosis in Humans

Graphical Abstract



STUDY HIGHLIGHTS -

- LCHF improves liver fat metabolism
- LCHF promotes rapid shift in gut microbiota of NAFLD patients
 - Changes associated with increased circulating folate

V. Keto Diet & CVD

“As a consequence of the rising obesity in industrialized countries, the incidence of cardiovascular diseases also increases. The **majority of deaths attributable to overweight-and obesity are cardiovascular deaths.**”.

- *Lancet. 2014;384:766–781*

“**Weight loss** has been associated with an **improvement** not only in **glycemic control** but also **cardiovascular risk factors** commonly altered in subjects with T2DM”.

- *Proc Natl Acad Sci U S A. 2009 Sep 8; 106(36):15430-5.*



V. Keto Diet & CVD - *Dyslipidemia*

Dyslipidemia is a well-known risk factor for cardiovascular diseases. As KD are usually high in fats, it is necessary to assess their potential effect on the lipid profile.

In humans, KD have been associated with...

- ✓ increases in HDL cholesterol levels^{2,3,4,5}
- ✓ decreases in triglycerides levels⁶
- ✓ Elevations (and reductions) in LDL cholesterol levels¹

Note – elevation in LDL is off-set by HDL

V. Keto Diet & CVD - *LDL*

KD have also been associated with an **increase in size and volume of LDL cholesterol** particles, which is considered to reduce cardiovascular risk by decreasing atherogenicity.

- *J. Nutr. 2005;135:1339–1342*

Ketogenic diets have been shown to **increase in LDL cholesterol** levels.

- *Ann. Intern. Med. 2010;153:147–157.*
- *Am. J. Clin. Nutr. 2009;90:23–32.*
- *Nutr. Metab. 2008;5:36.*
- *Ann. Intern. Med. 2004;140:778–785.*



V. Keto Diet & CVD

Three meta-analyses about the effect of KD on cardiovascular risk factors were recently published. Their conclusions are **unanimous about general positive effects** (but not unanimous about each single variable).

META-ANALYSIS #1

Santos et al. concluded in 2012 that low-carbohydrate diets lead to...

- ✓ significant decrease in **body weight & BMI**
- ✓ significant decrease in **abdominal circumference**
- ✓ significant decrease in both **systolic/diastolic blood pressure**
- ✓ significant decrease in **triglycerides levels**
- ✓ significant decrease in fasting plasma glucose/HbA1c
- ✓ significant increase in **HDL cholesterol levels**

and no change in LDL cholesterol levels.

Obes. Rev. 2012;13:1048–1066

V. Keto Diet & CVD

META-ANALYSIS #2

Bezerra Bueno et al. compared very-low carbohydrate diets to low-fat diets and their effects after a follow-up of at least 12 months.

Very-low carbohydrate diets confer...

- ✓ greater weight loss
- ✓ greater reduction in triglycerides and diastolic blood pressure
- ✓ increase in HDL and LDL* cholesterol levels.
- ✓ no difference in systolic blood pressure
- ✓ no significant difference b/w diets fasting blood glucose/HbA1c.
- ✓ no significant difference insulin levels/HbA1c.

Br. J. Nutr. 2013;110:1178–1187

V. Keto Diet & CVD

META-ANALYSIS #3 - Naude et al.

Includes 19 RCTs comparing low-carbohydrate diets to isoenergetic diets after two years of follow-up.

- ✓ both showed weight loss
- ✓ results in overweight + obese patients (w or w/o type 2 diabetes)
- ✓ strict adherence failed and declined with follow-up in most trials

PLoS ONE. 2014;9:e100652

WHAT DOES THIS MEAN?....



VI. Keto Diet Myths

Common Misconceptions

- 1) High fat diets do NOT make you burn more fat
- 2) Fats convert to fat BETTER than carbs
- 3) Dietary fat does NOT improve satiety (protein = satiety)
 - *But reduction in Tg may promote satiety*
- 4) Keto does NOT increase EE (only 100 kcal)
 - *Meta-analysis data do not support EE increases*

VI. Keto Diet Myths

Food Environment Trumps All?

Obesity

Volume 26, Issue 1, January 2018, Pages 11-13

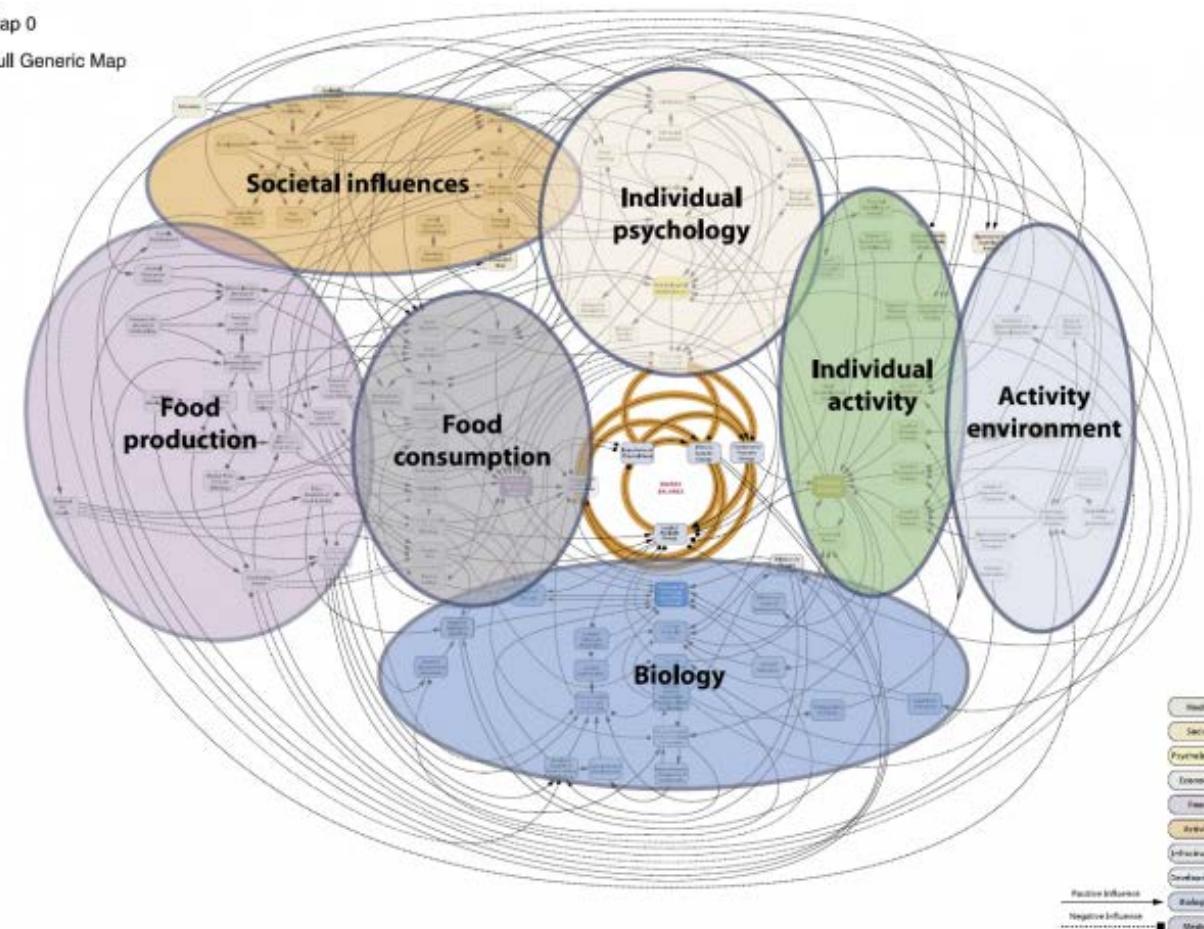
Did the Food Environment Cause the Obesity Epidemic? (Article)

Hall, K.D. 

National Institute of Diabetes and Digestive and

Abstract

Several putative explanations of the obesity epidemic have been theorized to be the prime culprit for population weight gain. The caloric quantity and quality of the food supply has changed, with processed foods from cheap agricultural inputs. These foods are engineered to have supernormal appetitive properties and also changed normative eating behavior, with more food available. While such changes in the food environment provide a plausible explanation, they are not the only factor. This article reviews the evidence for the role of the food environment in the obesity epidemic, and it highlights the need for further research. The author also discusses the potential for policy interventions to combat the obesity epidemic.



VII. Keto Diet – Potential Pitfalls



VII. Keto Diet – Potential Pitfalls

Keto Flu

- Typically 2 weeks (+/-)
- Adaptation period (i.e. metabolic flexibility)
- *Solution* – “tough it out!”



VII. Keto Diet – Potential Pitfalls

Low Sodium Levels

- Lower sodium levels
- Insulin Decrease = Sodium Decrease
- *Solution – Add Salt (Lots! 1.5-2.75 tsp/day)*
 - *Dr. James DiNicholantonio*



VII. Keto Diet – Potential Pitfalls

Low Electrolytes – Magnesium, Potassium, etc.

- **Solution –**

- More Magnesium
 - Fish, avocados, leafy greens, juices of meat
- More potassium
 - virtually every vegetable & fruit!



VII. Keto Diet – Potential Pitfalls

Alcohol – Practical Guidelines

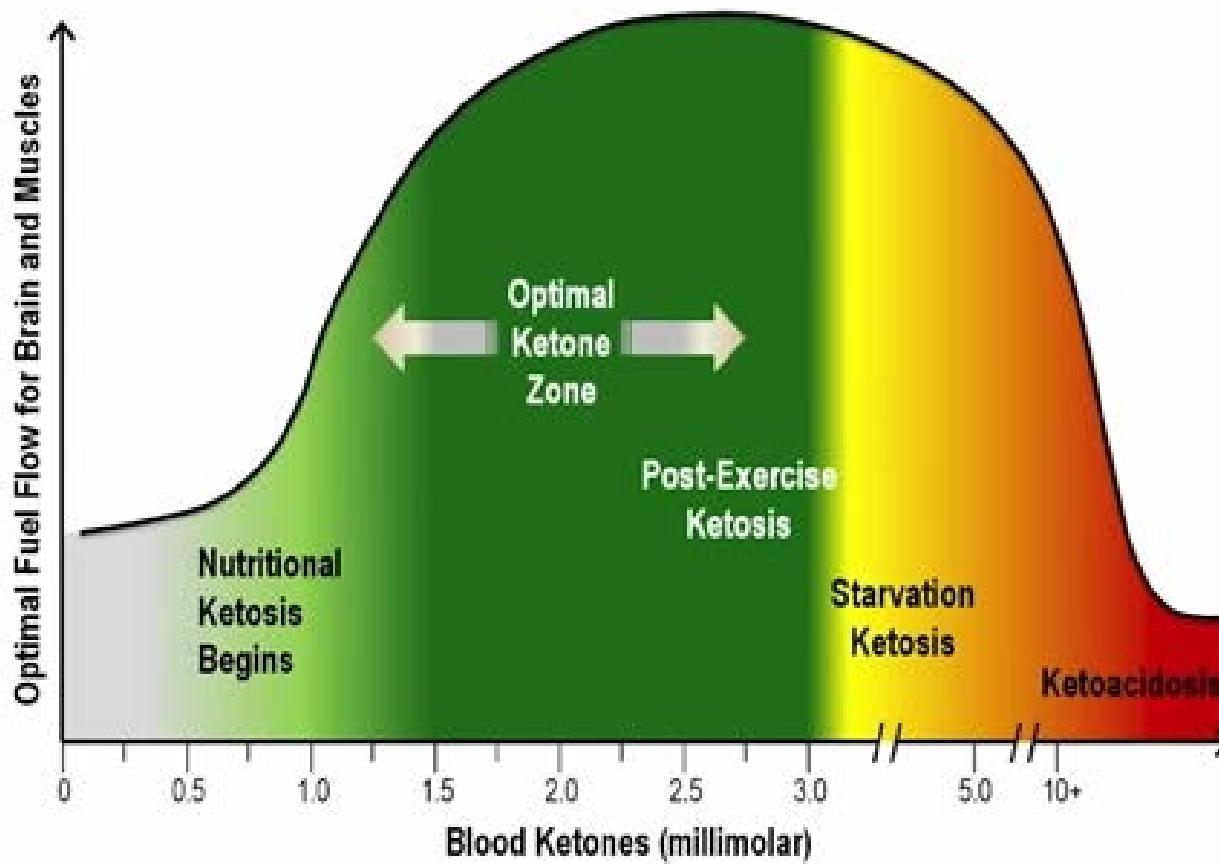
- If you're a BEER-drinker... NOT your diet
- *Solution = dry red wine + spirits (neat or water)*



VII. Keto Diet – Potential Pitfalls

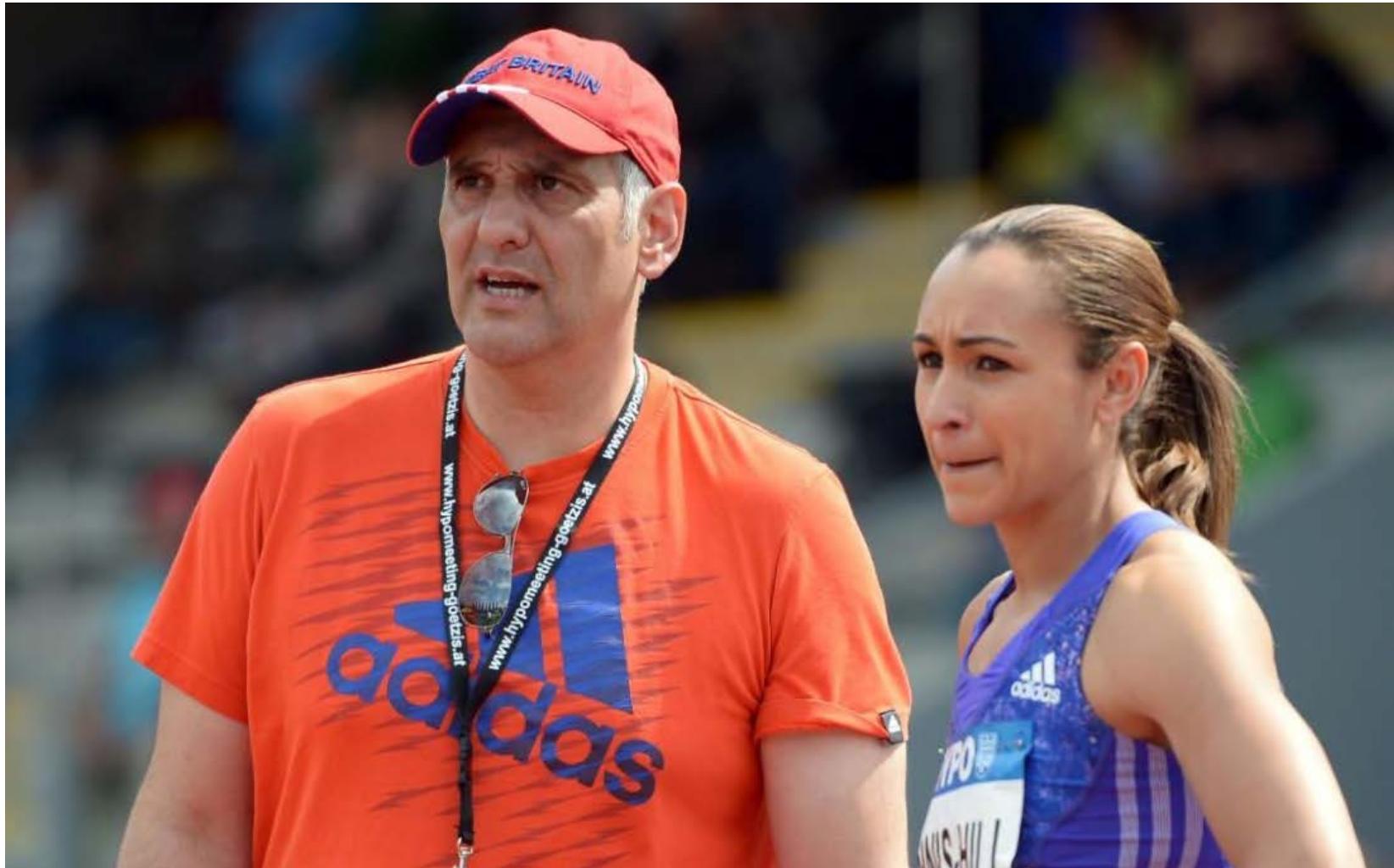
Nutritional Ketosis vs. Diabetic Ketoacidosis

The Ketone Zone



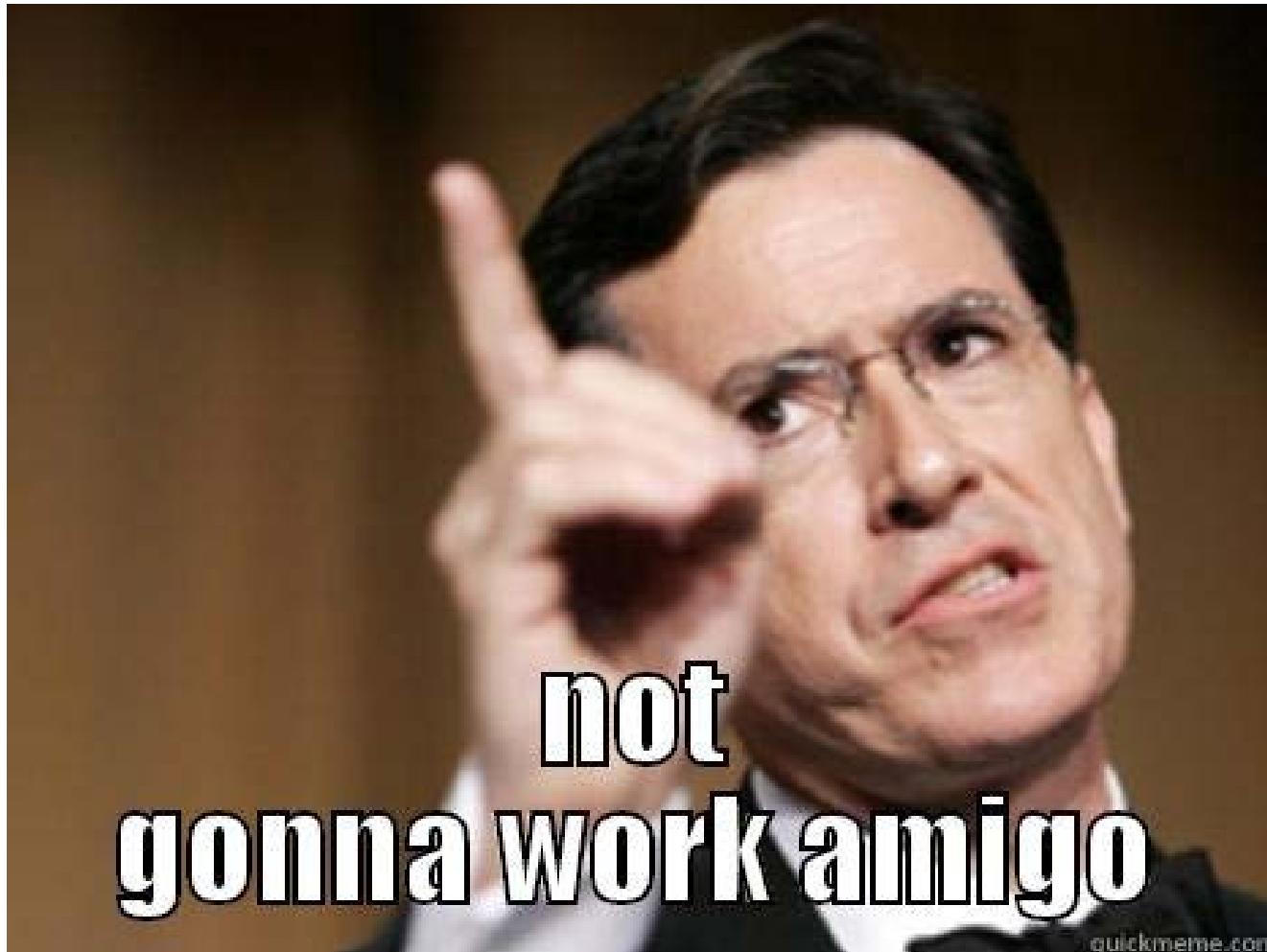
VIII. Coaching

Doctor = docere = “to teach”



VIII. Coaching

The Big Mistake - “Finger Wag”

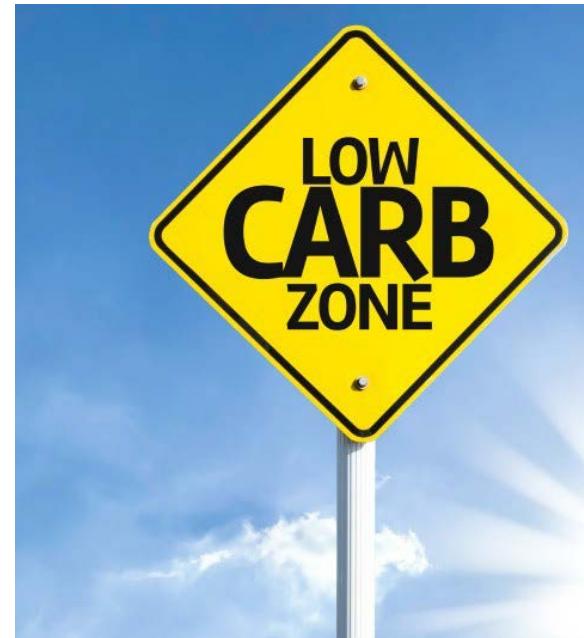


VIII. Coaching

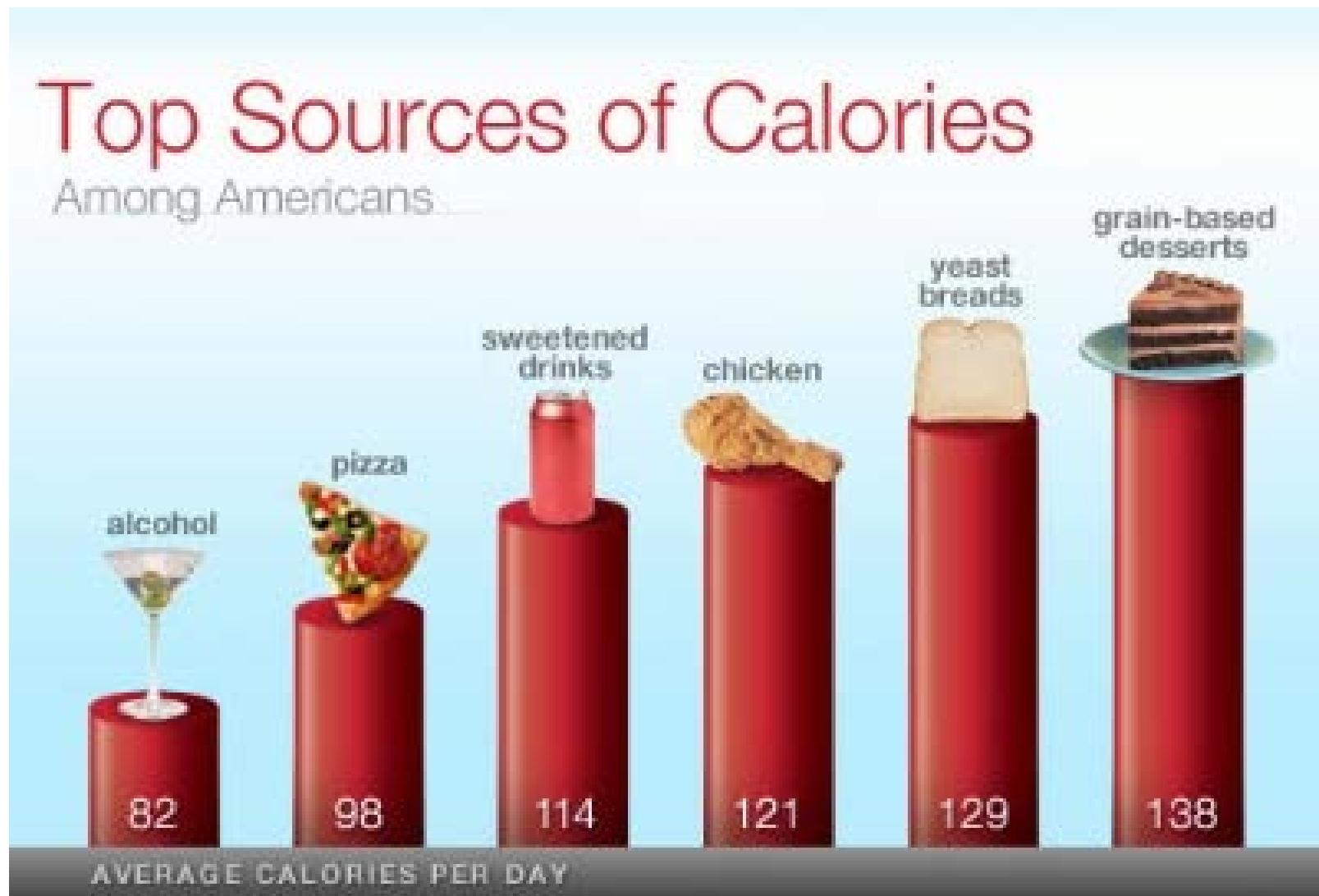
Do You Need To Go Keto?

QUESTIONS TO ASK CLIENTS

- ✓ Does it fit your lifestyle?
- ✓ Are you motivated to try it?
- ✓ Can you maintain in the long-run?
- ✓ What if you feel horrible?



What Foods Do We Reduce on LCHF?



VIII. Coaching

What To Do On Monday Morning?

Start With...

#1 - Breakfast (+ Snack AM)

- Adopt a low-carb breakfast
- Omit snacking before noon
- Remove sugar from coffee tea

Next Visit –

- Assess progress...
 - YES compliant – address Lunch + Snack PM
 - NO compliant – identify roadblocks

Next Visit –

- Assess progress...
 - YES compliant – address Dinner + Late night snack PM
 - NO compliant – identify roadblocks



BMJ Open Assessing the nutrient intake of a low-carbohydrate, high-fat (LCHF) diet: a hypothetical case study design

Caryn Zinn,¹ Amy Rush,² Rebecca Johnson²

Conclusion Despite macronutrient proportions not aligning with current national dietary guidelines, a well-planned LCHF meal plan can be considered micronutrient replete. This is an important finding for health professionals, consumers and critics of LCHF nutrition, as it dispels the myth that these diets are suboptimal in their micronutrient supply. As with any diet, for optimal nutrient achievement, meals need to be well formulated.

VIII. Coaching

“Build Bridges” – Gyms, Nutritionists, etc.



VIII. The Best Coaches...



VIII. The Best Coaches Build...

TRUST.



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