

VA  U.S. Department of Veterans Affairs
Department of Veterans Affairs
Office of Patient-Centered Care and
Cultural Transformation

Whole Health Life 

Eating for Whole Health

Day 2 Morning

- Your Brain on Food: Nutrition and Mental Health
- Serving It Up: Healthy Cooking Tips
- Nutrition and Pain
- Food and Your Future: Nutrition and Prevention

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Whole Health Life 

EATING FOR WHOLE HEALTH:

Nutrition For All Clinicians

WELCOME BACK,
D.C.!
Day 2



<http://imgthebooks.com/>

 Video: A Take on Mindful Eating: *Snack Attack*

<https://www.youtube.com/watch?v=reRcVxAWT1g>



Housekeeping – Pulse Checks

- Room temperature survey
- Coffee/Tea Upstairs
- Reminder about whole health library website:
www.wholehealth.wisc.edu
- We will try to keep things interactive and take time to stretch / move around throughout the day
- Please remember to submit questions to us before the Q&A
- Please stay throughout the whole conference for credit



Whole Health Education Website

<https://wholehealth.wisc.edu/>



Whole Health Education Website



Whole Health focuses on what matters most to each of us. It empowers people through mindful awareness and self-care, recognizing the fundamental importance of healthy nutrition, activity, sleep, relationships, surroundings, and the many other areas of our lives that contribute to our health and wholeness.

Whole Health supports patient-centered, proactive, whole-person care. Conventional testing and treatment are combined with complementary and integrative health strategies such as yoga, tai chi, and acupuncture. This website was created for clinicians who work with Veterans, but our resources can support everyone in their journey toward optimal health.

Eating for Whole Health

Day 2 Morning



PROFESSIONAL CARE

The professional care overviews apply complementary and integrative health concepts and therapeutic approaches to specific conditions. The intention is not to pressure clinicians to incorporate new modalities they may feel uncomfortable with, but rather to equip them with the latest research so they can have informed discussions with patients who are likely already experimenting with integrative health. This is especially important if patients are taking supplements that could react with other medications. Knowing the latest research on complementary and integrative health also adds to your expertise and could be a source of hope for patients struggling with chronic conditions.

CANCER CARE >	→	DIGESTIVE HEALTH >	←	Overviews
ENDOCRINE HEALTH >	→	HEART HEALTH >	←	
IMMUNE SYSTEM HEALTH >	→	MEN'S HEALTH >	←	
REPRODUCTIVE HEALTH >	→	SKIN HEALTH >	←	
WOMEN'S HEALTH >	→	CHRONIC PAIN >	←	
HEADACHE >	→	LOW BACK PAIN >	←	
MUSCULAR PAIN >	→	SELF-MANAGEMENT OF CHRONIC PAIN >	←	
ANXIETY >	→	DEPRESSION >	←	
COEXISTING WITH COVID >	→	PTSD >	←	
SUBSTANCE USE >	→		←	



Food and Drink

[Learn More](#)

DIGESTIVE HEALTH >

HEART HEALTH >





Digestive Health Tools

WHOLE HEALTH TOOLS

- Balloon Self-Hypnosis Technique for IBS and Abdominal Pain—A Guide for Clinicians
- Coming Off a Proton Pump Inhibitor
- Elimination Diets
- Gastroesophageal Reflux Disease (GERD)
- Inflammatory Bowel Disease (Crohn's Disease and Ulcerative Colitis)
- Irritable Bowel Syndrome (IBS)
- Preventing Recurrent Diverticulitis
- Promoting a Healthy Microbiome with Food and Probiotics
- Testing to Assess the Gastrointestinal Ecosystem
- The FODMaP Diet



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Veteran Handouts

<https://www.va.gov/PATIENTCENTEREDCARE/veteran-handouts/index.asp>

Food and Drink

- An Introduction to Food and Drink for Whole Health: [HTML](#) | [PDF](#)
- Choosing a Diet that Works for You (in progress)
- Eat to Reduce Inflammation (in progress)
- Healthy Tips on Eating Out and Grocery Shopping: [HTML](#) | [PDF](#)
- Mindful Eating: [HTML](#) | [PDF](#)
- How a Healthy Gut Makes for a Healthier You: [HTML](#) | [PDF](#)
- Weight Loss and Better Sugars Using Glycemic Index and Glycemic Load (in progress)
- Probiotics for Specific Conditions [HTML](#) | [PDF](#)
- How to Eat a Mediterranean Diet: [HTML](#) | [PDF](#)
- Using an Elimination Diet to Help Learn if Certain Foods are Making You Sick (in progress)
- Eating to Reduce Irritable Bowel Symptoms: The FODMaP Diet: [HTML](#) | [PDF](#)
- Whole Health Food, Drink, Activity and Symptom Log: [HTML](#) | [PDF](#)

 **Today's Agenda**

- MODULE 7:** NUTRITION AND MENTAL HEALTH
- MODULE 8:** HEALTHY TEACHING KITCHENS DEMO
- MODULE 9:** NUTRITION AND PAIN
- MODULE 10:** PREVENTION OF DM AND CV DISEASE
- LUNCH**
- MODULE 11:** PREVENTION OF CANCER
- MODULE 12:** CREATING THE PHP
FACULTY Q&A
IMPLEMENTATION EXERCISE #1
IMPLEMENTATION EXERCISE #2

 U.S. Department of Veterans Affairs
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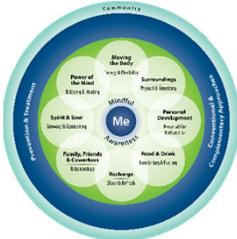
**7. Your Brain on Food:
Nutrition and Mental Health**

Eating for Whole Health



 **Veteran Vignette: Jim**





The diagram is a circular 'Whole Health Life' wheel. At the center is a blue circle with the word 'Me' and 'Resilience' below it. Surrounding this are four quadrants: 'Mindful' (top), 'Personal Development' (right), 'Health & Well-being' (bottom), and 'Social & Spiritual' (left). Each quadrant contains sub-points: 'Mindful' includes 'Meditation', 'Breathwork', and 'Mindfulness'; 'Personal Development' includes 'Education', 'Career', and 'Skills'; 'Health & Well-being' includes 'Exercise', 'Sleep', and 'Stress Management'; 'Social & Spiritual' includes 'Community', 'Faith', and 'Values'. The outer ring of the wheel lists 'Environment & Treatment' on the left and 'Community & Support' on the right.

Jim lives for his grandchildren. He is committed to staying healthy enough to see his youngest graduate from college.

Shutterstock ID: 124731090



Jim's 3-Day Food Journal

- Day 1:
 - 7am: Coffee with fat free creamer with muffin
 - 1pm: Ham and cheese sandwich
 - 3pm: Coffee and handful of candy
 - 6pm: Spaghetti and meatballs and a cookie
- Day 2:
 - 7am: Coffee with fat free creamer and cereal
 - 12pm: Subway meatball sandwich
 - 2pm: Coffee and some trail mix
 - 6:30pm: Steak and potatoes
- Day 3:
 - 7am: Coffee with fat free creamer with muffin
 - 1pm: Subway turkey and cheese sandwich + chips
 - 3pm: Coffee
 - 6pm: Beef Lasagna and a handful of cookies



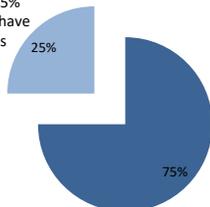
"Can Food Help My Depression?"

- Jim went to a nutrition workshop in the Wellbeing Program at his VA and learned about the relationship between food and mood
- He asks his provider- 'Can changing my diet really help my mood and anxiety AND my diabetes?'
 - He wants to better understand this link - hoping his clinical team can provide more information and a diet to support his mood



Mental Health Statistics

1 in 4 adults, 25% of Americans, have a mental illness



Depression: 6.7% of Americans have major depression and 1 in 10 Americans take antidepressants

Anxiety: 18.1% of Americans have anxiety disorders



Mental Health in Veterans

- 20% of Iraq and Afghanistan vets have major depression or PTSD.
- 19.5% of them also had Traumatic Brain Injury.
- 25% of them showed signs of Substance Use Disorder.
- In 2008, both active duty soldiers and veterans abused prescription drugs at TWICE the rate of civilians.
- There are **20 veteran suicides PER DAY**... loss of 9000 veterans per year. 14 of them never connected with the VA...



March 25, 2016 By National Veterans Foundation (<https://nvf.org/author/nvforg/>)



Mental Health in Veterans

- 2.1 million veterans received mental health treatment from the VA (2006-2010)
- **ONLY 50% of returning vets receiving mental health treatment**
- Barriers:
 - Personal embarrassment / shame
 - Long wait times to receive mental health treatment
 - Logistic problems: long travel distances to receive mental health through V.A.
 - Stigma assoc. with mental health
 - Lack of understanding of mental health problems and options to treat



(<https://www.gao.gov/assets/590/585743.pdf>)



Video: Why Veterans Miss War

https://www.ted.com/talks/sebastian_junger_why_veterans_miss_war?language=en



Why Veterans Miss War

Sebastian Junger, TED talk 2014.

- Key points:
 - There is adrenaline rush from war that is hard-wired, hormonally driven.
 - People pay money for these kind of rushes
 - The powerful bonds of brotherhood are hard to replicate in “normal” civilian life.



Dietary Intake/Nutrient Depletion Can Imitate Mental Health Disorders!

Mental Health Disorders:

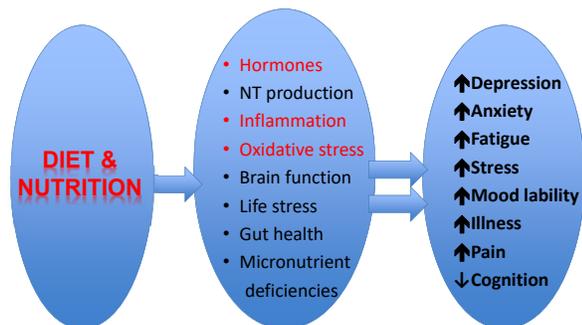
- Fatigue
- Anxiety
- Depression
- Irritability
- Poor mood
- Stress Intolerance
- Overeating, cravings
- Inability to sleep
- Neurotransmitter Depletion

Nutrient Depletion:

- Fatigue
- Anxiety
- Depression
- Irritability
- Poor mood
- Stress Intolerance
- Overeating, cravings
- Inability to sleep
- Neurotransmitter Depletion



How Nutrition Affects Psychology





S.A.D. & Processed Foods

- 320,000 *processed* foods are currently available with **10,000 “new” processed foods introduced annually**
- Technology made possible to manipulate foods’ sensory properties (e.g., sweeter, saltier, richer)
- “There appears to be no set point for the amount of fat or sugar people will eat” (Contento, 2007)
- Results
 - Only 1 in 10 Americans meet basic food group recommendations
 - By age 9, only 12% have good diets (same as adults)
 - **People now eat predominantly for pleasure, not nutritive value**



Nutrition, Inflammation, & Depression

Processed foods are linked to higher rates of depression.

Diets with foods that trigger inflammation (refined, processed foods) result in 29-41% greater risk for depression.

- Inflammation itself may mediate depressive symptoms.

Is depression a disease of inflammation?



Nutrition, Inflammation, and PTSD

- Patients with PTSD often adopt unhealthy eating practices
- Patients with PTSD are 31% more likely to be obese

- Growth factors in the brain are limited by pro-inflammatory effect of stressors (BDNF decreases, NF-kB and cytokines increase)
- Hippocampus-dependent fear memories are more abundant when neurogenesis is lower, and increasing omega-3 fatty acids and turmeric can also increase neurogenesis

- The Point: **Both EPA (fish oil) and Turmeric supplementation may decrease fear memories in PTSD**



Western Diets vs. Traditional Diets

Dietary Pattern and Depressive Symptoms During Middle Age (Akbaraly et al., 2009)

- Findings: A processed food dietary pattern is a risk factor for depression; Whole food diets are protective

Association of Western & Traditional Diets with Depression & Anxiety in Women (Jacka et al., 2010)

- Findings: Traditional dietary patterns are associated with lower risk for disorder; Western dietary patterns are associated with higher odds for disorder



Western Diets vs. Traditional Diets

Fast-Food and Commercial Baked Goods Consumption and the Risk of Depression (Sánchez-Villegas 2011)

- Findings:
 - 1) Fast food and processed pastries were associated with a higher risk of depression;
 - 2) Increased trans fat consumption led to **48% increase in risk of depression**;
 - 3) Trans fats implicated as a relevant risk factor for developing depression

Association Between Dietary Patterns and Depressive Symptoms Over Time: A 10-Year Follow-Up Study of the GAZEL Cohort (Le Port et al., 2012)

- Findings:
 - Western style - higher likelihood of depressive symptoms;
 - Traditional style - lower likelihood of depressive symptoms



Dietary Patterns & Depression

Systematic review and meta-analysis of dietary patterns and depression in community-dwelling adults (Lai et al., 2013)

- Findings:
 - **High intakes of fruit, vegetables, fish, and whole grains associated with a reduced depression risk**

A randomized controlled trial of dietary improvement for adults with major depression (Jacka et al., 2017)

- RCT - investigate the efficacy of a dietary improvement program for MDD; Findings:
 - dietary improvement may be an efficacious & accessible treatment strategy for MDD & the benefits could extend to the management of common co-morbidities as well.

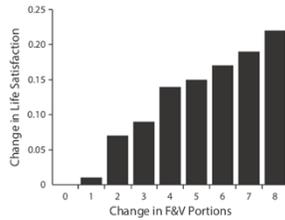


More Benefits To Fruits & Vegetables

Analyzed fruit/veg consumption and correlation to happiness score

Population: 12,385 Australian adults 2007-2013

Result: going from 0-1 servings / day to 8/day was **equivalent to happiness effect of going from unemployed to employed**



(Mujcic, 2016)

**Sugar –
not so sweet ☹️**



Sugar, Mental Health, & Cognition

Sugar = a cascade of biochemical reactions that result in chronic inflammation in the body

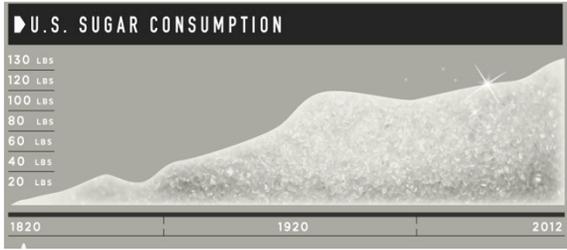
- Inflammation = leads to system-wide disruption in biochemical processes, which results in many problems including cognitive problems and mental health disorders

Robert Lustig, MD: fructose/sugar research

- *Sugar: The Bitter Truth; Fat Chance*

The Progression of U.S. Sugar Consumption

From 2 lbs/yr to 154 lbs/yr

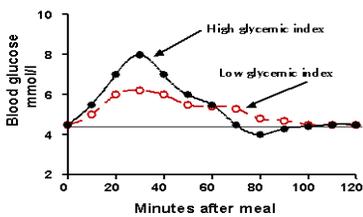


Infographic from: <http://www.mindbodygreen.com/0-5906/MindBlowing-Sugar-Consumption-Infographic.html>

Sugar – Worse than Just Empty Calories...

- Increased blood pressure
- Increased obesity
- Increased cholesterol
- Increased triglycerides
- Increased cardiovascular disease
- Increased insulin resistance
- Cancer tumor growth
- Liver disease
- Increased depression and anxiety
- < Memory/hippocampal structure
- Reduced learning ability
- Metabolic syndrome in the brain
- Increased inflammation
- Dental disease

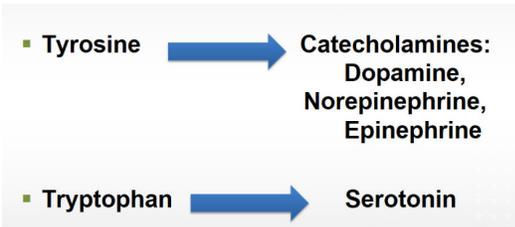
Glycemic Index



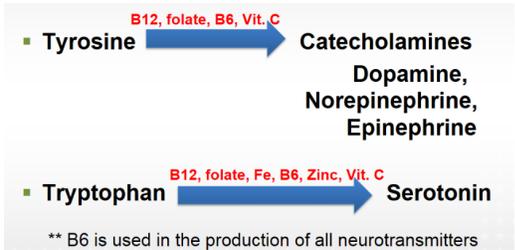
Key Point:
Sugar to Fiber
ratio should be
≤ 5:1

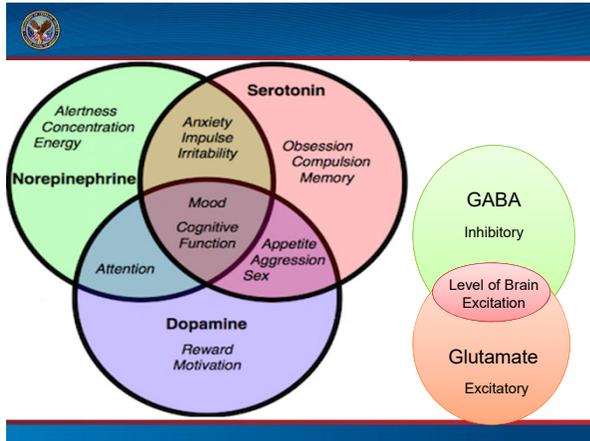
Feeding your Brain: Neurotransmitters

Neurotransmitters



Nutrition & Neurotransmitter Production





Bottom Line

- Macro- and micronutrients are essential for cellular function, including brain cell function
- Without consuming right amount of nutrients—the cell cannot function optimally
 - Results in signs and symptoms of physical disease and mental health disorders
- **Takeaway: Diet supplies the necessary proteins and vitamins for neurotransmitter synthesis**

Feeding your Brain: Micronutrients



Multivitamins and Mood

Effects of Vitamin and Mineral Supplementation on Stress, Mild Psychiatric Symptoms, and Mood in Nonclinical Samples: A Meta-Analysis

Methods
Eight randomized and placebo-controlled studies that evaluated the influence of multivitamin/mineral in the general population for at least 28 days were reviewed using meta-analysis

Results
Supplementation reduced the levels of perceived stress, mild psychiatric symptoms, and anxiety, but not depression. Fatigue and confusion were also reduced.

Conclusions
Micronutrient supplementation has a beneficial effect on perceived stress, mild psychiatric symptoms, and aspects of everyday mood in apparently healthy individuals. Supplements containing high doses of B vitamins may be more effective in mood states. Questions about optimal levels of micronutrient intake, optimal doses, and active ingredients arise.

Leong SJ, Benton D. Psychosomatic Medicine. 75(2):144–153, 2013 DOI: 10.1097/PSY.0b013e31827d5fbd



Vitamin C and Cognitive Impairment

Article
Vitamin C Status Correlates with Markers of Metabolic and Cognitive Health in 50-Year-Olds: Findings of the CHALICE Cohort Study

John F. Pearson¹, Juliet M. Pullar², Renee Wilson³, Janet K. Spittlehouse⁴, Margreet C. M. Vissers⁵, Paula M. L. Skidmore⁵, Jinny Willis⁴, Vicky A. Cameron³ and Anitra C. Carr^{5*}

Higher levels of dietary vitamin C were associated with better metabolic health and lower risk of cognitive impairment

(J.M.P.); margreet.vissers@otago.ac.nz (M.C.M.V.)
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Vitamin D And Depression

NIH Public Access
Author Manuscript
Issues Ment Health Nurs. Author manuscript; available in PMC 2011 June 1.
Published in final edited form as:
Issues Ment Health Nurs. 2010 June ; 31(6): 385–393. doi:10.3109/01612840903437657.

Vitamin D and Depression: Where is all the Sunshine?

Sue Penckofer, PhD, RN,
Loyola University Chicago, School of Nursing, Maywood, Illinois, USA
Joanne Kouba, PhD, RD,
Loyola University Chicago, School of Nursing, Maywood, Illinois, USA
Mary Byrn, BSN, RN, and
Loyola University Chicago, School of Nursing, Maywood, Illinois, USA

Dosing: 1000-2000 IU/ day; replacement is level dependent

Abstract
Depression in its own right is a disabling condition impairing all aspects of human function. In persons with a chronic medical disease, depression often makes the management of chronic illness more difficult. Recently, vitamin D has been reported in the scientific and lay press as an important factor that may have significant health benefits in the prevention and the treatment of many chronic illnesses. Most individuals in this country have insufficient levels of vitamin D. This is also true for persons with depression as well as other mental disorders. Whether this is due to insufficient dietary intake, lifestyle (e.g., little outdoor exposure to sunshine), or other factors is addressed in this review. In addition, reasons at risk and potential treatment for low dietary vitamin D

Omega 3's for Depression



- A recent meta-analysis of 19 RCT's found omega-3 fatty acid supplementation effective at treating patients with major depressive disorder (MDD)
 - Dosing varied widely across trials but averaged 1.4g of combined EPA and DHA daily.
- Initiating omega-3 supplementation with a selective serotonin reuptake inhibitor (SSRI) resulted in better reduction of depressive symptoms than the SSRI alone.

Volker Maehrkke/Corbis
Plus ONE, 2014 9(5)
Journal of Clinical Psychopharm., 22(1), 61-64

Are there certain nutrients that are more helpful for mood?

Systematic review of RCT dietary supplements in managing female stress and anxiety.

Essential Fatty Acids (EFAs), B vitamins, vitamin C, magnesium and/or zinc supplements on female stress and anxiety levels. (14 studies) of women aged 18 years and over in a studies of stress /anxiety

RESULTS:

EFA were effective in reducing perceived stress and salivary cortisol levels during pregnancy; anxiety in premenstrual and menopausal women

Combined magnesium and vitamin B6 supplementation reduced premenstrual anxiety but had no effect when used in isolation and did not affect stress in women suffering from dysmenorrhea

Older women experienced anxiety reduction using vitamin B6, but not folate or vitamin B12.

High-dose sustained-release vitamin C was effective in reducing anxiety and blood pressure in response to stress.

IBI Database System Rev Implement Rep.15(2) : 402-453; 2017

The Potential for Nutrition to Reduce Depression, Suicide, and Impulsive Aggression

The Potential for Military Diets to Reduce Depression, Suicide, and Impulsive Aggression: A Review of Current Evidence for Omega-3 and Omega-6 Fatty Acids

CAPT Joseph R. Hibbeln, MD, USPHS; Rachel V. Gow, PhD†*

ABSTRACT The current burden of psychological distress and illness poses as a significant barrier to optimal force efficacy. Here we assess nutrients in military diets, specifically highly unsaturated essential fatty acids, in the reduction of risk or treatment of psychiatric distress. Moderate to strong evidence from several meta-analyses of prospective cohort trials indicate that Mediterranean diet patterns reduce risk of clinical depression. Specific nutrients and foods of biological interest in relation to mental health outcomes are then discussed and evaluated. Moderate evidence

"This article recommends that a rebalancing of the essential fatty acid composition of U.S. military diets, achieve tissue compositions of HUFAs consistent with traditional Mediterranean diets, may help reduce military psychiatric distress and simultaneously increase force efficacy substantially."

recommendation that a rebalancing of the essential fatty acid composition of U.S. military diets, achieve tissue compositions of HUFAs consistent with traditional Mediterranean diets, may help reduce military psychiatric distress and simultaneously increase force efficacy substantially.

Drug-Induced Nutrient Depletion

DRUG	NUTRIENT DEPLETED
Estrogens	Vit B6, Magnesium, Zinc
Metformin	B12
Steroids	Calcium, Vit C, Vit D, Zinc, Magnesium, Folic Acid, Selenium
Furosemide	K+, Calcium, Magnesium, B1, B6, Vit C, Zinc
Beta blockers, Statins	Coenzyme Q10

And, many more . . .

Drug-Induced Nutrient Depletion Handbook, LexiComp 2001

Drug-Induced Nutrient Depletion CALCULATOR

medications symptoms results

mytavin
Calculate your needs

Enter the medication for symptom using the next tab in search box and calculate your needs.

ethinyl estradiol

[calculate]

more than **half** of americans take meds
* nutrient depletion symptoms
* nutrient loss causes symptoms

mytavin
Calculate your needs

Copyright © 2016 - MyTavin, Inc.
The MyTavin calculator and its results are meant as information only and are not a substitute for medical care or advice from a healthcare professional. The MyTavin calculator does not store any of your personal or medical information. The results are not guaranteed or warranted.

www.mytavin.com

(demo)

<http://mytavin.com/>

NUTRIENT:	SYMPTOMS OF DEFICIENCY:	REFERENCES:
MELATONIN	insomnia, fatigue, adhd, irritable bowels, breast cancer risk (more)	1,2
FOLIC ACID	tongue inflammation, gingivitis, poor appetite, shortness of breath, diarrhea, (more)	1,2
SODIUM	weakness, poor concentration, confusion, dehydration, poor appetite (more)	1,2

NUTRIENT:	SYMPTOMS OF DEFICIENCY:	REFERENCES:
B12	anemia, fatigue, weakness, constipation, weight loss, neuropathy, depression, confusion, (more)	1,2
CALCIUM	osteoporosis, numbness, muscle pain, tremors, fatigue, poor appetite, abnormal (more)	1
MAGNESIUM	muscle pain, poor appetite, nausea, vomiting, weakness, insomnia, osteoporosis, (more)	1,2
ZINC	poor wound healing, weakened immunity, taste abnormalities, erectile dysfunction, (more)	1,2
FOLIC ACID	tongue inflammation, gingivitis, poor appetite, shortness of breath, diarrhea, (more)	1
PROBIOTICS	irritable bowel syndrome, diarrhea, indigestion, decreased stomach acid, constipation, (more)	1
IRON	anemia, fatigue, weakness, brain fog, muscle pain, restless leg (more)	1

Feeding your Brain: Gut Health

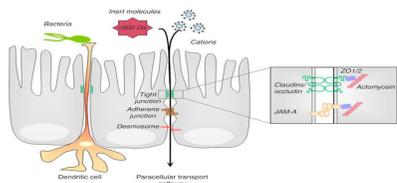
Food for Mood: *Out with the Bad; In with the Good; The five R's*

- **Removal** of dietary factors associated with mental health symptoms
 - Sugar and simple carbohydrates
 - Processed foods
 - Trans fats
- **Replace** with increased intake of:
 - Protein
 - Healthy fats
 - Vegetables
 - Complex/high nutrient carbs
- **Reinoculate, Repair, Rebalance.....**



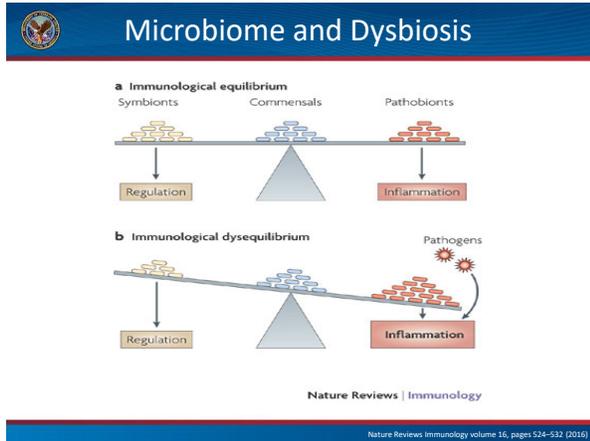
Intestinal Permeability

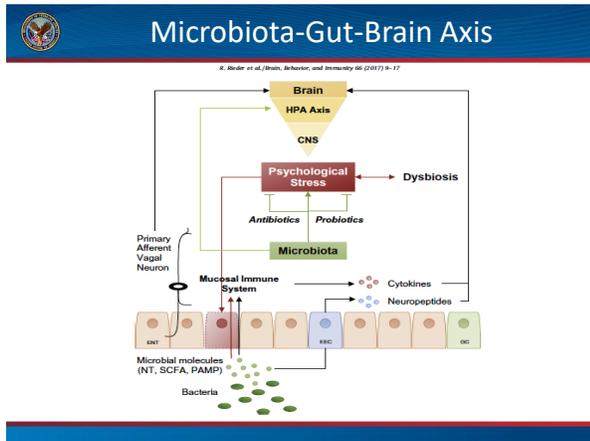
- Inflammation, food sensitivities, drugs, environmental factors – all disrupt the integrity of the tight junctions between cells in your gut (enterocytes)
 - larger molecules (e.g., improperly digested food, bacteria, and other pathogens) can pass through and get into the blood stream



Ménard, Sandrine et al. "Multiple facets of intestinal permeability and epithelial handling of dietary antigens." *Mucosal Immunology* 3 (2010): 247-259.







Microbes and Mental Health

[Brain Behav Immun.](#) 2017 Nov;66:9-17. doi: 10.1016/j.bbi.2017.01.016.

Microbes and mental health: A review.

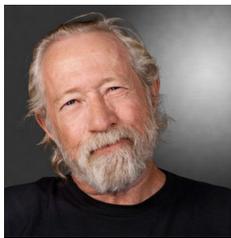
Rieder R¹, Wisniewski PJ², Alderman BL³, Campbell SC⁴.

There is a growing emphasis on the relationship between the microorganisms inhabiting the gut (gastrointestinal microbiota) and human health. The emergence of a microbiota-gut-brain axis to describe the complex networks and relationship between the gastrointestinal microbiota and host reflects the major influence this environment may have in brain health and disorders of the central nervous system (CNS). **Bidirectional communication between the microbiota and the CNS occurs through autonomic, neuroendocrine, enteric, and immune system pathways.**

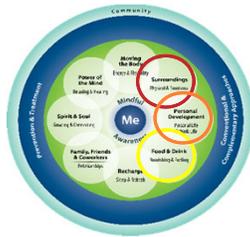
Jim's 3-Day Food Journal

- Day 1:
 - Highly processed, S.A.D. diet.
 - Lack of Vegetables and whole grains – sources of vitamins
 - Lack of healthy fats
 - Lots of coffee
 - Lots of sugar/ refined carbs
 - Protein intake may be okay but might want to shift to more plant-based
 - How's his microbiome?
- ...beer Lasagna and a handful of cookies

Work your way around the circle



Shutterstock ID: 124733290

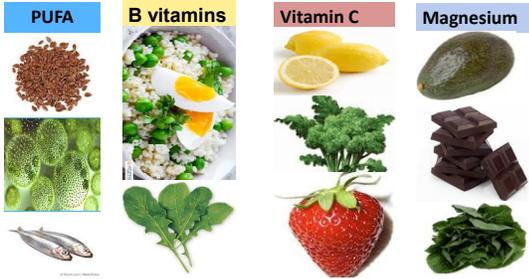


What else could be contributing to his mental health symptoms?

Case Summary: Jim

- Jim works with his PCP to develop a plan to support his diabetes and mood/anxiety through nutrition
 - Referred to Wellbeing Program for integrative nutrition education – learns about:
 - Blood sugar adrenal axis, inflammatory foods, neurotransmitter production, gut healing foods, micro-and macronutrients
 - Referred to RD to support nutrition intervention
 - Food journal and a personalized dietary approach to support his health and life goals

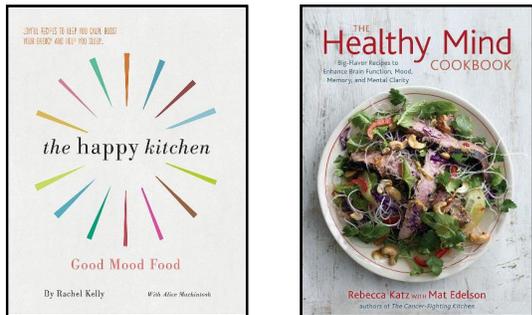
 Sources of Mood- balancing Nutrients



 The Point: Nutrition & Mental Health Are Linked

- A healthy diet is associated with better mood and less depressive symptoms.
- A diet high in refined/processed foods is associated with increased risk of depressive symptoms and lower mood.
- Nutritional deficiencies may lead to mental health disorders and cognitive impairment
- Sugar consumption may have deleterious effects on mental, physical, and cognitive health

 Two Great Mood Cookbooks!



 **Recipe: Eggs over Greens**

Makes 1 serving
Prep Time: 20 min.

Ingredients

- Dark leafy greens (enough to fill up pan)
- 1 Tablespoon Olive oil
- ¼ onion (optional), diced
- Salt and pepper to taste
- 2 eggs



Directions

- Remove stems from leafy greens if they are large, thick stems. Chop or break leafy greens into bite-sized pieces.
- Heat frying pan over medium heat. Add oil. Add onion and sauté until translucent and soft.
- Add leafy greens and stir to coat with oil. Add salt and pepper. Continue to sauté until greens begin to soften.
- Spread the greens out in the pan so they cover the whole bottom. Then, crack the 2 eggs on top of the leaves. Add a drizzle of water to the edge of the pan, turn heat to low, and then cover the pan. Cook for 3-5 minutes, depending on how soft you want the eggs.

Practical Exercise

What key points from this exercise will assist me in building a healthy foundation for my own mental health? The health of our veterans?

What nutrition resources will I offer my patients with mental illness (in addition to a consult to a mental health professional and dietitian)?

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 Whole Health Life

8. Serving It Up: Healthy Cooking Tips

Eating for Whole Health



Serving It Up: Objectives

1. To highlight the National NFS Healthy Teaching Kitchen (HTK) Program which is offered at numerous VA facilities throughout the country
2. To demonstrate how food preparation courses featuring healthy recipes and kitchen skills can be taught to Veterans
3. To share facility specific nutrition programming and resources, and how to refer patients
4. To identify national resources for VA nutrition programming



Healthy Teaching Kitchen (HTK)

- Once a month healthy cooking class
 - Walk-ins only
- Implemented at Jesse Brown in August 2015
 - Offered the 2nd Thursday of every month
 - Started using Facebook Live Stream for class July 2016
 - Publish monthly mini videos since November 2017
- Classes are created and taught by a clinical dietitian who is also a professionally trained chef
- Cooking demo based class, with food samples and recipes provided





Healthy Teaching Kitchen (HTK)

- Teach practical applications of nutrition recommendations to help improve health
 - HTN
 - CHF
 - CKD
 - Diabetes
 - Obesity
- All levels of cooking experience and interest are welcome





Healthy Teaching Kitchen (HTK)

- Casual atmosphere – questions and discussion are welcome
- Always reinforce: sanitation, food safety, and knife skills/safety
- Topics change monthly
- All recipes aim to promote healthy weight & blood sugar management, decreased sodium intake, and are budget friendly
- Food Pantry ingredients are promoted when possible





Healthy Teaching Kitchen (HTK)

- Class provides Veterans with exposure to different cooking tools and methods, new ways of thinking about food, ingredients and uses



Magic Banana "Ice Cream"

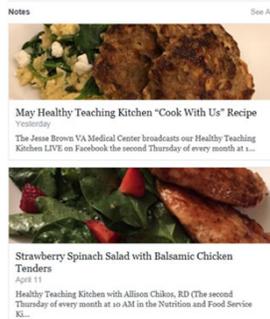


Cauliflower "Rice" and Beans



Healthy Teaching Kitchen (HTK)

- Benefits of Facebook live stream
 - Increasing access
 - Virtual interaction between Veterans and providers
 - Cook with us! recipe of the month
 - Sharing teaching methods, recipe ideas, and supporting the VA community
 - Reinforcement
 - Uploaded videos can be accessed at anytime by Veterans after class





Healthy Teaching Kitchen (HTK)

- What have we learned?
 - There will be technical difficulties
 - Privacy
 - Appearance matters
 - Background noise
 - Room set up
 - Personalization
 - Post class surveys!
 - Tailor upcoming lessons to help meet population needs
 - Helps to promote repeat attendance
 - Short video options → 1 min videos of popular recipes
 - Use multiple social media platforms to reach different age groups
 - @VACHicago now on Instagram!





Jesse Brown VA FB Page Video

<https://www.facebook.com/VACHicago/videos/vl.582833408849385/505395456901193/?type=1>

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Healthy Teaching Kitchen Cooking Demo

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Cultural Transformation

Whole Health Life 

9. Nutrition and Pain

Eating for Whole Health

 Nutrition and Pain Objectives



- Describe the relationship between **nutrition and inflammation**
- Discuss the relationship between **inflammation and pain**

- Name **two dietary interventions** that can be used for **pain management**

 Anna has Arthritis

- 47 year old Army Gulf War Veteran
- Osteoarthritis (OA) – knees, hands
- Given oxycodone
 - Hates how it makes her feel
 - Struggles with fatigue
- Offered injections
- Comorbidities
 - HTN, obesity, GERD
- Art professor- requires standing
- Would like to know if there are things she can add to her diet for natural pain management



 Mainstream Recognition



TIME
BROWN'S RECORDS
IS BOWLING UNDER THIPPED?

THE SECRET KILLER
The surprising link between **INFLAMMATION** and HEART ATTACKS, CANCER, ALZHEIMER'S and other diseases. What you can do to...

 Cytokines (inflammatory signals)

- Responsible for multiple aspects of inflammatory process
 - pain initiation and persistence
- Direct activation of nociceptive (pain pathway) neurons
 - Contribute to nerve-injury/inflammation-induced central sensitization
- Can influence development of hyperalgesia/allodynia
- Can be directly affected by food



 Inflammatory Mediators as Pain Mediators

Commonly Measured in Research

- **Prostaglandins**
 - Sensitize peripheral nociceptors
- **Leukotrienes:**
 - Increase vascular permeability
- **TNF- α**
 - Activates NF- κ B (proinflammatory signaling pathway) & apoptosis
 - evokes spontaneous sensory electrical activity
- **NF- κ B**
 - Binds to DNA to increase transcription of proinflammatory cytokines
 - final common pathway for activation of cytokine production





Inflammatory Mediators & Structural Modulation

- **TNF-α**: Elevated in RA and OA joints
- **IL6**: Increases osteoclast activity/bone studies
- **PGE2**: High levels impede collagen synthesis
- **Nitric oxide**: Regulator of response inflammatory mediator in joints
- Mechanical stress may precipitate release/activity of inflammatory mediators





Osteoarthritis: The Rotterdam Study

- N= 5600 people ≥ 55; women > men
- X-rays of the knee, hip, hand scored using the Kellgren score for OA at T=0, T= 6.6, T=10 years
- Intimal thickness (IMT) and carotid plaque measured T=0
- **IMT showed independent association with the prevalence of knee osteoarthritis**
- Carotid plaque with distal interphalangeal (DIP) OA and metacarpophalangeal (MCP) osteoarthritis
- **Take home: OA may be a reflection of overall inflammation**

Hoeven TA et al Ann Rheum Dis 2013 72(5):646-51



Nutrition, OA & Weight

It's the latest thing.
It's called the veterinarian diet.



- Lose excess weight = improve function!
 - 10 lb ↓ = 28% ↑ function
 - N=80, intervention a low energy diet, weekly dietary sessions
 - NNT to improve WOMAC scores by >50% was 3.4
 - Pathological changes
 - Decreased joint compression
 - Altered hamstring firing
 - IDEA trial (Messier)
 - Both diet and exercise contribute to weight loss and pain reduction
 - Diet changes bigger contributor

-Christensen R et al., Osteoarthritis Cartilage, 2005;13:20-7
-Messier SP et al. Osteoarthritis Cartilage, 2010;19:272-80.
-Messier JAMA, 2013;310(12):1263-1273

Nutrition Tools

- Anti-Inflammatory Diet
- Elimination Diet
 - will discuss during headache module
- Microbiome
- Single nutrients



Balanceoflifeinc.com

Anti-Inflammatory Diet – Highlights

- What affects inflammation
 - The fats we eat
 - Omega-3's and 6's/ratio
 - Antioxidants
 - Glycemic index
 - Microbiome
- Mediterranean Diets
 - anti-inflammatory
- 14 key steps
 - Not imperative to do all at once



The Anti-inflammatory Food Pyramid

14 Ways to Eat Toward an AID

1. Keep non-fish animal fats intake low
2. Eat more fish
3. Limit omega-6 fats
4. Eat more omega-3's
5. Keep vegetable and fruit intake high
6. Eat whole grains
7. Eat dietary fiber
8. Eat legumes
9. Eating nuts and seeds
10. Include anti-inflammatory herbs and spices
11. Avoid charred foods
12. Pay attention to glycemic load
13. Avoid obesity
14. Ensure adequate magnesium

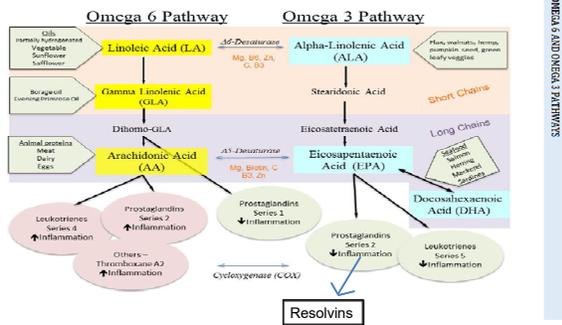


Anti-inflammatory Diet: the Basics

- Be fat smart
 - Limit saturated
 - Avoid trans fats
 - Emphasize omega-3
- Eat 5-9 servings of fruits and vegetables/day
- Use antioxidant herbs and spices
- Eat 25+ grams of fiber each day
- Optimize glucose metabolism



Why Fat Is Important



OMEGA 6 AND OMEGA 3 PATHWAYS

13

Fruits and Veggies

- **GOAL:** 5-9 servings daily
 - ensures 25 grams fiber
 - Assists in maintaining microbiome
- **Fiber is fab!**
 - binds toxins and cholesterol
 - ↑ stool exit time / ↓ CRP
- **Studies show**
 - ↑ intake of fruits and vegetables ↓ inflammation ↓ CVD
- **Phytochemicals** ↓ inflammation





Nutrient & Mineral Deficiencies and Pain

Antioxidants: Vitamin C

- Vitamin C is called the “Master antioxidant”
- Vitamin C shown to be preventative in development of CRPS after fracture
- – administered in ED for wrist fracture 500 mg, 1000 mg, and 1500 mg.
 - 1000 mg or 1500 mg had lower risk of developing CRPS
 - Age group with greatest effect: older frail women who had potentially lower levels of nutritional repletion.



Zollinger P, Tuinebreijer V, Breederveld W, Kreis R Can Vitamin C Prevent Complex Regional Pain Syndrome in Patients with Wrist Fractures? A Randomized, Controlled, Multicenter Dose-Response Study J Bone Joint Surg Am. 2007;89:1424-1431.



Nutrient & Mineral Deficiencies and Pain:

Antioxidants: Alpha – lipoic Acid

Alpha Lipoic Acid –

Prevention/ amelioration of diabetic foot pain.

- Very strong anti-oxidant
- Both IV and oral forms shown to alleviate pain from diabetic neuropathy
- slows progression of diabetic foot pain.





Nutrient Deficiencies and Pain: Omega 3 FA

- Omega 3 Essential Fatty Acids
 - Contribute to the systemic level of inflammation in the body
 - A deficiency of EFA has been associated with peripheral neuropathy
 - Lower plasma PUFA, omega-6 fatty acids, linoleic acid, omega-6/omega-3, arachidonic acid and docosahexaenoic acid levels significantly predicted a steeper decline in nerve function parameters over 3-year follow-up.
 - Some evidence that lack of omega 3 fatty acids can be associated with painful conditions, not just imbalance of pro and anti inflammatory sources. But also with function of specific organs or tissues mainly the nervous system. Omega 3 deficiency is associated with decreased nerve function especially in the elderly.



Lauretania F Bandinelli S, Benedettac B, Cherubinid A, et al Omega-6 and omega-3 fatty acids predict accelerated decline of peripheral nerve function in older persons Eur J Neurol. 2007 July ; 14(7): 801–808



Meal Composition Matters

- Low insulin diet may decrease plasma CRP
McCarty MF Low-insulin-response diets may decrease plasma C-reactive protein by influencing adipocyte function *Medical Hypotheses* 2005 64(2):385-7.
- High glycemic load correlates positively with plasma CRP
Liu S, Manson JE, Buring JE, Stampfer MJ, Willett WC, Ridker PM. Relation between a diet with a high glycemic load and plasma concentrations of high-sensitivity C-reactive protein in middle-aged women. *American Journal of Clinical Nutrition* 2002 75(3):492-8





Minding The Microbiome In Pain

- Did you know...
 - We are **more non-human than human cells**
- We **want** to have our friends on board!
- **Prebiotics and probiotics**
 - Can modify the microbiome
 - Help maintain a healthy gut





Osteoarthritis, Fiber and Probiotics



- Fiber and probiotic use have inverse association with OA of the knee
- After 6 months of a probiotic drink, those who had been given the drink had improved pain and WOMAC scores over those who did not
- Prospective studies show an association between fiber intake and OA

Lei et al The effect of probiotic *Lactobacillus casei* Shirota on knee osteoarthritis: a randomised double-blind, placebo-controlled clinical trial. *Benef Microbes*. 2017 Oct 13;8(5):697-703

Dai Z, Niu J, Zhang Y, Jacques P, Felson D Dietary intake of fibre and risk of knee osteoarthritis in two US prospective cohorts *Annals of the Rheumatic Diseases*. 76(8):1411-1419, 2017

Eating for Whole Health

Day 2 Morning

Studies on Anti-inflammatory Spices

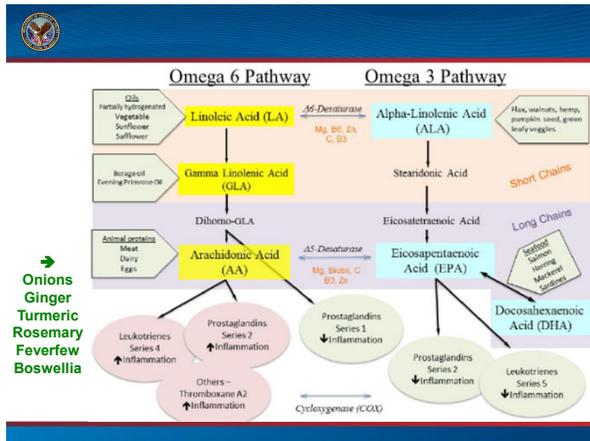
Cloves > Cinnamon > Ginger > Garlic

Shobana S. Naidu KA. Antioxidant activity of selected Indian spices. Prostaglandins Leukot Essent Fatty Acids. 2000; 62:107-110.

Popovic M, et al. Effect of parsley extracts on some biochemical parameters of oxidative stress in mice treated with CCl(4). Phytother Res. 2007;21:717-723

Yadav AS, Bhatnagar D. Modulatory effect of spice extracts on iron-induced lipid peroxidation in rat liver. Biofactors. 2007;29(2-3):147-157.

Joe B, Vijaykumar M, Lokesh BR. Biological properties of curcumin-cellular and molecular mechanisms of action. Crit Rev Food Sci Nutr. 2004;44:97-111.



A Word on Dietary Supplements PP219

Dietary Supplements for Pain: A Clinician's Guide

- Summarizes research & prescribing tips
- Formulary
 - fish oil, vitamin D, magnesium
- Foods
 - ginger, turmeric
- Table for others
 - name recognition

Photo © Adam Kiroff/Getty

What Did Anna Do?

- Discussed needs with provider
 - Participated in creating PHP
 - focus on food, drink, and movement
- RD referral
 - plant based, ↑ nutrient & fiber, ↓ glycemic eating plan
 - Focus: ↓ inflammation and promoting weight loss
- Attended Healthy Teaching Kitchen class
- Results (thus far) over 9 months
 - ↓ 15% weight
 - Preps own nutrient dense meals
 - remains active & manages breakthrough pain with NSAID <2 x/month
 - Thinking about taking "Power of the Mind" Class to help with her pain



Meet Mike

- 33 year old OIF Veteran
- Hx migraines & tension headaches
 - 1 or 2 each week
- Multiple meds tried
 - HATES side effects
- Wonders about other approaches
- Acupuncture helped to reduce by 50%
- Poor diet and steady weight gain
- Limited physical activity
- Sees psychiatrist and counselor for PTSD



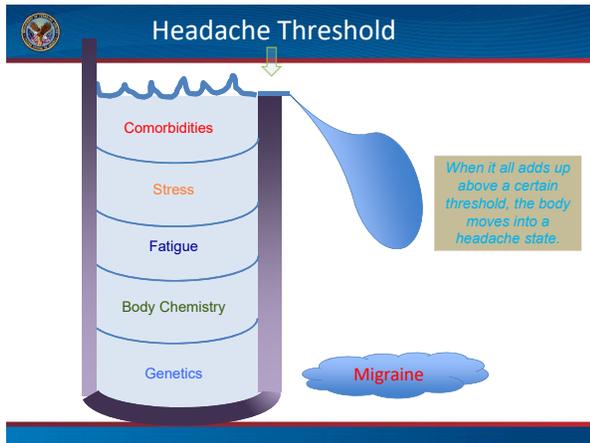
Blog.handmadebyherbes.com

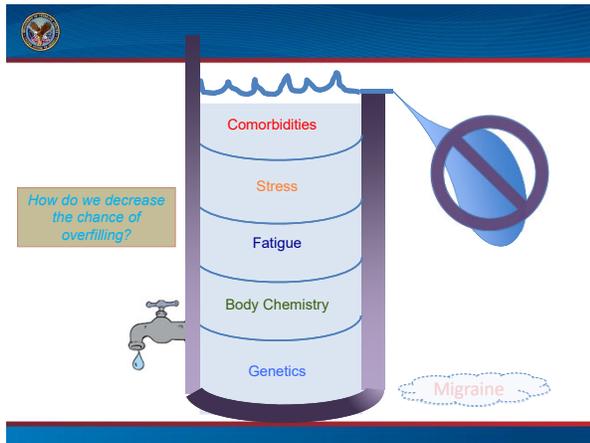
Headaches: The Facts

- **Migraine & tension headaches**
 - 2nd & 3rd most common condition
 - 11% MHA
 - 98% have at least one
- **Headaches are systemic**
 - Hyper vigilance
 - Nervous system hypersensitivity
 - Multiple contributing factors
 - Not just about 'triggers'
 - Genetics
 - Comorbidities – mood, sleep, and pain disorders, allergies, epilepsy
 - Lifestyle, diet, stress, neck pain
 - Often need **multiple interventions**
 - One is rarely enough



Herbes.com





Quick Tips

Food and Drinks for Headaches:

- Don't skip meals
 - Reactive hypoglycemia
- Eat at regular times
- Achieve optimal weight
 - Obesity ↑ migraines
- Be mindful of caffeine intake and withdrawal
- Stay hydrated
- Consider an allergy-elimination Diet



What did Mike do?

- Met with RD
 - Created plan to eat regular, balanced meals
 - Increased Mg containing foods
- Began MgOxide from VA
 - 400 mg bid per provider's suggestion
- Started allergy inflammation diet
 - Found sensitivity to wheat and soy
 - Avoided x 3 months
 - Retrial showed mild reaction (fatigue)
- Continued to receive acupuncture
- Breathing techniques for relaxation when migraines are active



Blog.handmadetbyheroes.com



Meditation for Chronic Pain in U.S. Veterans

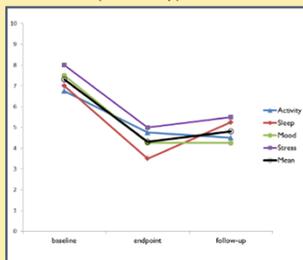
- Mindfulness meditation (MM) taught to military veterans who have sustained a traumatic brain injury (TBI) during deployment to Afghanistan (OEF) or Iraq (OIF).
- Integrative Restoration Yoga Nidra (iRest®), is a Tier I intervention for managing pain in military and veteran populations and is used clinically at VHA medical centers nationwide.
- iRest promotes deep relaxation through breathing, guided imagery, and progressive relaxation techniques.





Meditation for Chronic Pain in U.S. Veterans

Figure 7. Mean Pain Interference by Subscale of the DVPRS (Case Group)



Baseline: Chronic pain > 5/10

8 weeks of iRest program

27% reduction in reported pain



How did Mike do?

- Avoided wheat and soy for 3 months; re-trial showed mild reaction to wheat (fatigue) and almost immediate reaction to soy
- Able to eat wheat about once per week, but may experience fatigue; now avoids soy completely
- Maintains his healthier diet with some deviations
- Headaches occur less than once per month





Nutrition and Pain: Monday Morning

- What can you do in five minutes?
- Think of a patient you have with either osteoarthritis or migraine headache
- Turn to a neighbor and describe how you would introduce the concept of using nutrition to help their pain
- How will you decide what to suggest first?
 - Use handouts?
 - Suggest a cooking class?
 - Are there groups you can recommend?



- The Bottom Line -

- Food can have a profound effect on pain
- Modification of nutritional status, inflammatory profile, and the diversity of our microbiome can significantly impact pain
- Nutrition can be a safe, efficient and empowering component of a Whole Health oriented pain management program

Practical Exercise

Discuss the following at your table: during this module, we learned how inflammation plays a key role in the development of osteoarthritis.

Imagine a 40 year old male Veteran comes to your clinic with early signs of osteoarthritis of the right shoulder and the left knee. Your Veteran asks you for some pain management and prevention strategies besides steroid injections and surgery.

What are some interventions you can suggest for his health plan? When discussing diet in particular, what SPECIFIC recommendations would you suggest?



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10. Prevention of Cardiovascular Disease and Diabetes

Eating for Whole Health



Educational Objectives: Food and Your Future

- List **three** ways in which **nutrients** work to **inhibit cancer growth**
- Name **three** foods with proven **cancer prevention properties**
- Discuss the relationship between **cardiovascular risk** and the **Mediterranean Diet**
- List two **lifestyle changes** that can **positively affect diabetes**

 Personalized, Proactive, Patient-Driven



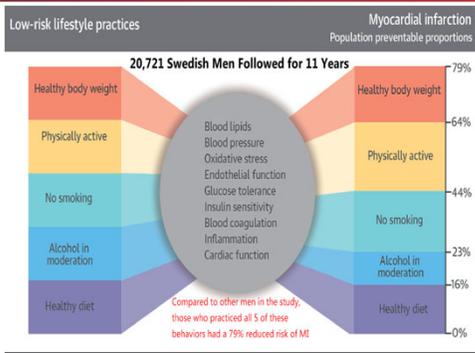
Tailor my care to me as a person

Help me prevent future problems and prepare for any health problem that comes up

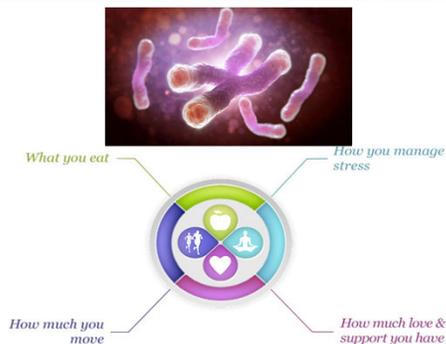
Support me with what matters most to me

MentorHealth.va.gov

 General Prevention Practices: Swedish Men Study



 Ornish Lifestyle Medicine Clinics



Ornish Lifestyle Medicine Clinics

REVERSE HEART DISEASE REVERSE DIABETES

REVERSE PROSTATE CANCER LOSE WEIGHT

OUR RESEARCH FOUND THAT THE SAME DIET AND LIFESTYLE RECOMMENDATIONS CAN ACCOMPLISH EACH OF THESE. IT'S AS THOUGH YOUR BODY CAN PERSONALIZE WHAT IT NEEDS TO HEAL IF YOU GIVE IT THE MOST HEALTHY INGREDIENTS.

BEST DIETS
USNews
DIABETES
2016

Dietary Patterns and Prevention

2018 review
68 studies, n of > 1.6 million
Examined 3 dietary patterns
Outcome of all-cause mortality & disease incidence

Eating Pattern	Adherence Assessment Tool
USDA's 2015-2020 Dietary Guidelines for Americans	Healthy Eating Index (HEI)
Harvard's Healthy Eating Plate	Alternate Healthy Eating Index (AHEI)
Dietary Approaches to Stop Hypertension (DASH)	Dietary Approaches to Stop Hypertension Score

Schwingshackl L, et al. J Acad Nutr Diet. 2018 Jan;118(1):74-100

Benefits Highest-Quality Diet Ratings

- All-cause mortality - AHEI
– RR=0.78 (CI: 0.77-0.80)
- CVD mortality or incidence - AHEI
– RR=0.78 (CI: 0.76-0.81)
- Cancer incidence or mortality - DASH
– RR=0.84 (CI: 0.82-0.87)
- Diabetes type 2 - AHEI & DASH
– RR=0.82 (CI: 0.78-0.85)
- Neurodegenerative Disease - AHEI
– RR =0.85, (CI: 0.74 to 0.98)

Carbohydrates And All Cause Mortality

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

Sara B Seidelmann, MD · Brian Cagggett, PhD · Susan Cheng, MD · Mir Henglin, BA · Amil Shah, MD · Lynn M Steffen, PhD · et al. Show all authors

- 15,428 adults 45-64 years old
- 3 groups: **low carb, normal carb, high carb**
 - Low Carb: <40% carb calories
 - Normal Carb: 50-55% carb calories
 - High Carb: >70% carb calories
- 25 year follow-up monitoring for all cause mortality
- **Results: both low carb and high carb --> higher risk**
 - replacement of CHO with animal proteins & fats **increased** mortality risk compared to plant-based proteins and fats

2019 Study – Carbohydrate Quality And Human Health

Carbohydrate quality and human health: a series of systematic reviews and meta-analyses

Andrew Reynolds, Jon Moore, John Greenwood, Nicola Whittles, Eulalia Mota, Lisa F. Whangan

Background: Previous systematic reviews and meta-analyses exploring the relationship between carbohydrate quality and health have usually examined a single marker and a limited number of clinical outcomes. We aimed to more precisely quantify the positive potential of several markers, to determine which markers are most useful, and to establish an evidence base for quantitative recommendations for intake of dietary fibre.

Methods: We did a series of systematic reviews and meta-analyses of prospective studies published from database inception to April 30, 2017, and randomised controlled trials published from database inception to July 26, 2018, which reported on indicators of carbohydrate quality and non-communicable disease incidence, mortality, and risk factors. Studies were identified by searches in PubMed, Ovid MEDLINE, Embase, and the Cochrane Central Register of Controlled Trials, and by hand searching of previous publications. We excluded prospective studies and trials reporting on participants with a chronic disease, and single biomarker trials or trials involving replacement. Searches, data extraction, and bias assessment were duplicated independently. Robustness of pooled estimates from random-effects models was confirmed with sensitivity analyses, meta-regression, dose-response testing, and subgroup analyses. The GRADE approach was used to assess quality of evidence.

Findings: From studies (15 randomised controlled trials and 100 prospective studies) and 56 clinical trials with 65,151 adult participants were included in the analyses. Observational data suggest a 15–30% decrease in all-cause and cardiovascular related mortality, and incidence of coronary heart disease, stroke, diabetes and mortality, type 2 diabetes, and colorectal cancer when comparing the highest dietary fibre consumers with the lowest consumers. Clinical trials show significantly lower haemoglobin, systolic blood pressure, and total cholesterol when comparing higher with lower intakes of dietary fibre. Risk reduction associated with a range of clinical outcomes was greatest when daily intakes of dietary fibre were between 7.6 and 19.9 g. These outcomes were consistent for both soluble and insoluble fibre.

high fiber diets, 25-29 gm per day, is associated with **15-31% reduction in risk for all-cause mortality, heart disease, type 2 DM, and colorectal cancer.**

2019 systematic review & meta-analyses of prospective cohort studies and randomized control trials

- **4635 adult participants**

Implications of evidence:

- Help patients eat a **minimum of 25-29 grams fiber/day.**
- Recommend whole grains /discourage refined grains
- Glycemic index/load not as helpful

Patient Vignette: Tonya

- 36 year old nurse & Army Veteran
- Father had Myocardial Infarction (MI) at 50
- Mother with Ductal Carcinoma In Situ (DCIS) at 38
- No smoking/hypertension (HTN)
- Borderline high cholesterol
- Negative mammogram and breast exams
- Soda x 3 during shifts



 Tonya's PHI

Food and Drink: "Nourish and Fuel" Eating healthy, balanced meals with plenty of fruits and vegetables each day. Drinking enough water and limiting sodas, sweetened drinks, and alcohol.	2	5
Professional Care: "Prevention and Clinical Care" Staying up to date on prevention and understanding your health concerns, care options, treatment plan, and their role in your health.	3	5

Reflections

Now that you have thought about what matters to you in all of these areas, what is your vision of your best possible self? What would your life look like? What kind of activities would you be doing?

I am doing everything I can to prevent future problems. I don't get breast cancer. I keep my cholesterol under good control. I am active, even when I am an old granny, chasing my grandkids around! No diabetes like my parents had.

Are there any areas you would like to work on? Where might you start?

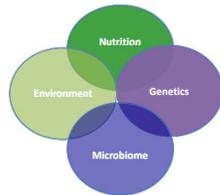
I need help with my eating. I have read a lot about how diet affects risk, and my risks. I know I need to talk to my doctors more. Having other support would also be great.

 Thinking About
Tonya's Personal Health Plan

Considering Tonya's risk factors

Make suggestions for changes in

- Eating style
- Eating habits
- Specific nutrients



Potential referrals

Recommendations for change related to **other parts of the circle?**

Of course....ask her!

Discuss At Your Table:
What Would You Tell
Tonya?

Dietary Patterns and Prevention

- 2018 review
- 68 studies, n of > 1.6 million
- Assessed three dietary patterns in relation to disease mortality and prevention

Eating Pattern	Adherence Assessment Tool
Dietary Guidelines for Americans	Healthy Eating Index
Harvard's Healthy Eating Plate	Alternate Healthy Eating Index
Dietary Approaches to Stop Hypertension (DASH)	Dietary Approaches to Stop Hypertension Score

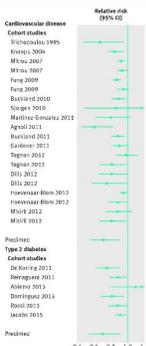
Schwingshackl L, et al. J Acad Nutr Diet. 2018 Jan;118(1):74-100

Benefits of Highest-Quality Diets

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- Neurodegenerative Disease RR=0.85, (CI: 0.74 to 0.98)

Schwingshackl L, et al. J Acad Nutr Diet. 2018 Jan;118(1):74-100

Mediterranean Diets



Mediterranean diets are associated with decreased risk of cardiovascular events and type 2 diabetes in cohort studies



Matthias B Schulze et al. BMJ 2018;361:bmj.k2396

©2018 by British Medical Journal Publishing Group





There Are Many CV Risk Factors... and Many Ways to Reduce Them

1. Endothelial cell damage

- High blood pressure
- **Insulin resistance**
- Diabetes
- Tobacco
- Sedentary
- Stress
- Depression and Anxiety

**2. LDL enters the intima
(oxidized LDL triggers
inflammatory signals)**

3. Inflammation

White cell activation

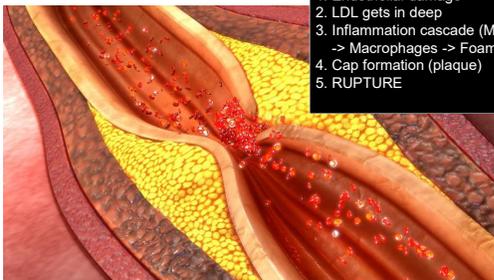
- Monocytes → macrophages
→ foam cells
- Oxidation and free radicals
- Nitric oxide runs low
- Platelet adhesion increases

4. Cap Formation

- Platelet adhesion
- Smooth muscle proliferation
- Cap ruptures and may cause clotting



Summary of LDL deposition



1. Endothelial damage
2. LDL gets in deep
3. Inflammation cascade (Monocytes
→ Macrophages → Foam cells)
4. Cap formation (plaque)
5. RUPTURE

<https://medlineplus.gov/publica/>



CVD Quick Nutrition summary

- Whole diets adhering to AHEI, DASH program – all with aggregate 22% reduced risk of CVD death.
- High Med diet scores – 25% reduced risk of heart disease
- Similar beneficial nutritional components:
 - High (at least 5 but probably more) servings of vegetables and fruit – aim for 29+ gm fiber!
 - 1-2 servings of nuts per day
 - Emphasis on plant-based proteins and fats
 - Extra Virgin Olive Oil
 - Omega-3 fatty acids



The Role of the Dietitian in CVD

Nutrition Education and Goal Setting

- Anti-inflammatory diet or MNT for CVD (dyslipidemia, TG, IR, etc)
- How to replace saturated fat and refined oil with monounsaturated fat and omega-3
- Pros/cons of omega-3 supplements
- How to reduce added sugar and how to read the food labels
- How to increase fiber
- Foods to increase potassium and magnesium
- Weight management
- Meal Planning
- Referral to other self-care resources – HTK, yoga, stress management, physical therapy, chaplain services, PTSD support, sleep hygiene classes, acupuncture, biofeedback, etc.



Salmon Salad Recipe

Ingredients:

- 1/4 cup mayonnaise (try to use one made with avocado oil or olive oil)
- 2 tablespoons extra virgin olive oil
- Juice from half a Lemon
- 14 ounces canned salmon, drained
- 1 red bell pepper, diced
- 1/2 red onion, minced
- 1/4 cup fresh parsley, minced

Optional Ingredients:

- 1 avocado, diced
- 1 cup canned garbanzo beans
- 1/4 cup pickles, chopped



How to make it:

- In a small bowl, whisk the mayonnaise, olive oil, and lemon juice until well emulsified. Set aside.
- In a large bowl, add the salmon, bell pepper, red onion, and parsley. If desired, add optional ingredients.
- Pour the mayonnaise mixture over the salmon mixture and combine.
- Serve on top of fresh greens or use as a dip with vegetables like carrot and celery sticks.



Brownie Bites (no added sugar)

Ingredients:

- 1 ½ cup raw walnuts
- ¼ cup cocoa powder, unsweetened
- 1 teaspoon vanilla extract
- ¼ teaspoon salt
- 1 cup soft dates, pitted
- 1 tablespoon water



How to make it:

1. In a large food processor fitted with an “S” blade, grind the walnuts into a fine meal. Add in the rest of the ingredients and process until a sticky uniform dough is formed.
2. Scoop the batter by heaping tablespoons onto a plate lined with parchment paper, to prevent sticking. Make 12 balls.
3. Roll the balls between your hands and roll them in cocoa powder or coconut flakes, if desired.
4. Store in freezer. Serve chilled for best texture and flavor.

Tonya and Diabetes



Recap: Tonya

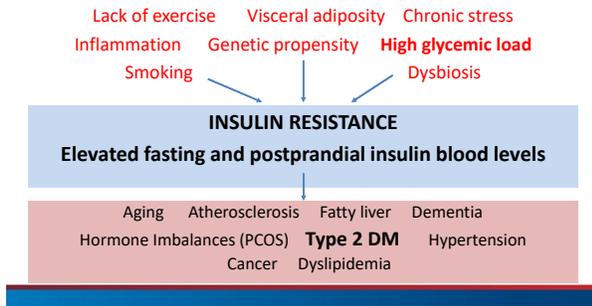
- 36 year old nurse, also an Army Veteran
- Father had an Myocardial Infarction (MI) at 50
- Mother with Ductal Carcinoma In Situ (DCIS) at 38
- No smoking, no Hypertension (HTN), borderline cholesterol
- Negative mammogram and breast exams
- **LOVES her non-diet soda 3 times during her shift**
- **Wants to avoid heart attack and cancer**



http://www.amed.com.ar/fariseo

 Prevent Insulin Resistance to Prevent Diabetes

Antecedents, Triggers and Mediators of Insulin Resistance

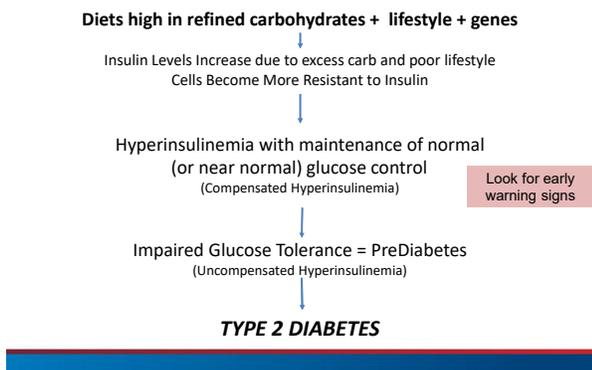


 Hgb A1c: 3 Month "Average" Blood Glucose

- 4.5-5.6%: "normal"
- 5.7-6.4%: increased risk of diabetes
- 6.5% or higher: diabetes
- **Hgb A1c <5.0% associated with lowest cardiovascular disease and mortality in non-diabetic individuals**
- 5.5-6.0% appropriate level to implement preventive measures. Even at 5% we can look for clues of IR

ADA 2010 Jan Supplement to Diabetes Care
N Engl J Med 2010 Mar;362(9):800-11

 How Insulin Resistance Progresses to Type 2 DM





Early Signs of Insulin Resistance

- Low energy and fatigue, especially after meals
- Cravings for sugar or high carb foods
- Mood swings - from energy/blood sugar swings
- Hormone imbalance (ex: PCOS)
- Weight gain, especially central adiposity
- Acne
- Acanthosis Nigricans
- Skin tags





Back to Dietary Patterns

2017 systematic review of 48 studies, n=1.5 million
Associated dietary patterns with diabetes incidence in nondiabetic, healthy participants

- Mediterranean RR of diabetes=0.87
- Alter. Health Eating Index (AHEI) RR=0.79
- DASH RR=0.81
- Processed meat, refined grains, high-fat dairy, eggs, fried food RR=1.44 (CI: 1.27-1.62)
- Veggies, legumes, fruits, poultry, fish, nuts RR=0.84 (CI:0.77-0.91)

Jannasch F, J Nutr 2017;147:1174-82.



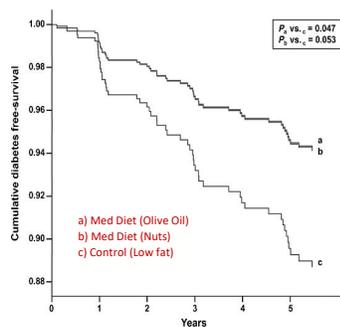
Med Diet and Diabetes Risk

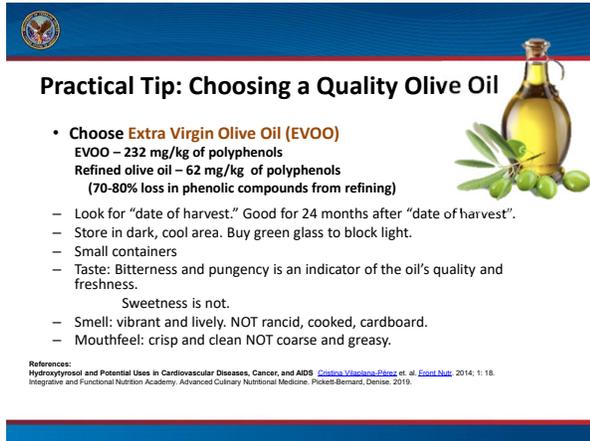
52% reduction in diabetes compared to control group in pts with 3 CV risk factors.

- 418 subjects in 3 groups (Age: 55-80)
- No calorie restriction
- No weight loss
- No increase in exercise
- Benefits remain!!

Safos-Salvado Diabetes Care. 2011 Jan;34(1):14-9.

Predimed study re-scrutinized, 2018 re-do of data is available with similar conclusions

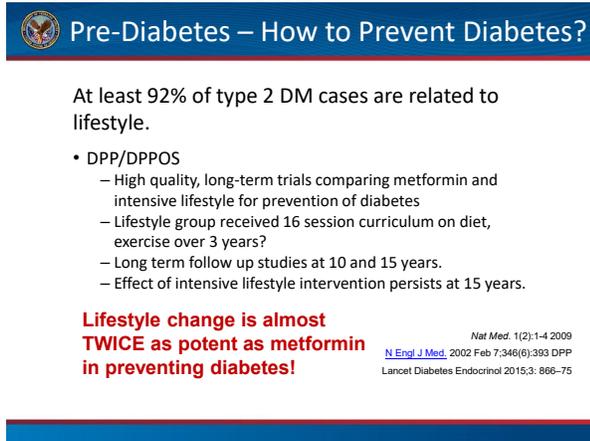




Practical Tip: Choosing a Quality Olive Oil

- Choose **Extra Virgin Olive Oil (EVOO)**
EVOO – 232 mg/kg of polyphenols
Refined olive oil – 62 mg/kg of polyphenols
(70-80% loss in phenolic compounds from refining)
- Look for “date of harvest.” Good for 24 months after “date of harvest”.
- Store in dark, cool area. Buy green glass to block light.
- Small containers
- Taste: Bitterness and pungency is an indicator of the oil’s quality and freshness.
Sweetness is not.
- Smell: vibrant and lively. NOT rancid, cooked, cardboard.
- Mouthfeel: crisp and clean NOT coarse and greasy.

References:
Hydroxytyrosol and Potential Uses in Cardiovascular Diseases, Cancer, and AIDS [Castro-Vieira-Pérez et al. Front Nutr. 2014; 1: 18.](#)
Integrative and Functional Nutrition Academy. Advanced Culinary Nutritional Medicine. Pickett-Bernard, Denise. 2019.



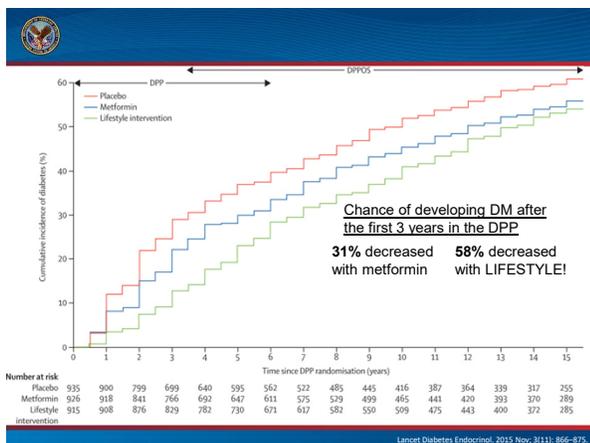
Pre-Diabetes – How to Prevent Diabetes?

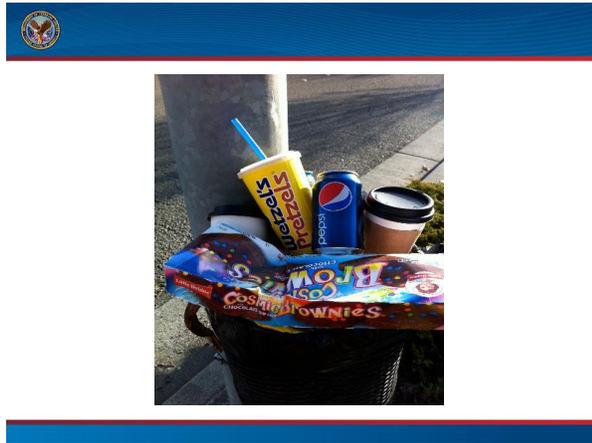
At least 92% of type 2 DM cases are related to lifestyle.

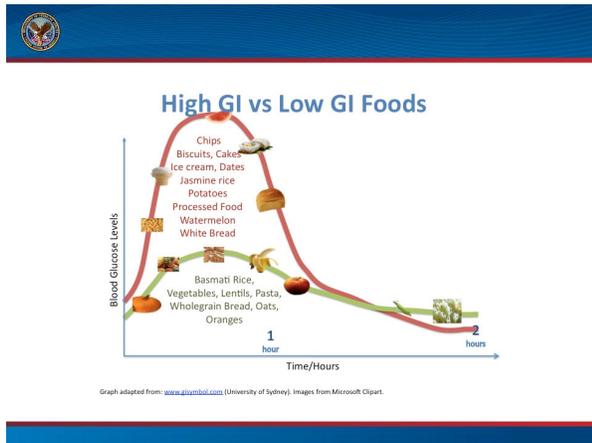
- DPP/DPPOS
 - High quality, long-term trials comparing metformin and intensive lifestyle for prevention of diabetes
 - Lifestyle group received 16 session curriculum on diet, exercise over 3 years?
 - Long term follow up studies at 10 and 15 years.
 - Effect of intensive lifestyle intervention persists at 15 years.

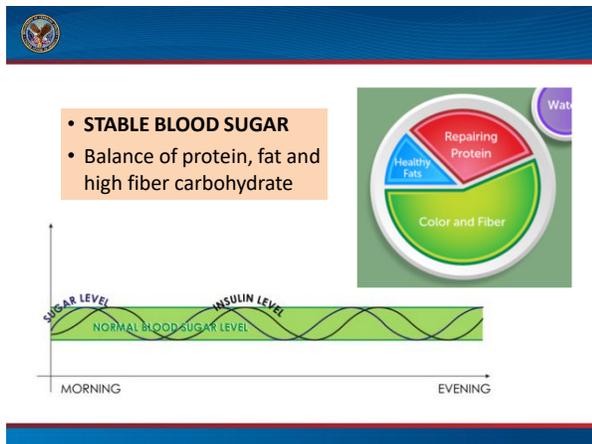
Lifestyle change is almost TWICE as potent as metformin in preventing diabetes!

Nat Med. 1(2):1-4 2009
N Engl J Med. 2002 Feb 7;346(6):393 DPP
Lancet Diabetes Endocrinol 2015;3: 866-75











What about the Protein?

- Data from EPIC (European Perspective Investigation into Cancer and Nutrition), n = 38,000+
- Diabetes risk increased with higher total protein (hazard ratio 2.15 [95% CI 1.77-2.60])
- Sub-analysis:
 - Animal protein (2.18 [1.80-2.63]) intake.
 - **But vegetable protein was not related to diabetes risk.**
 - **So load up on your nuts, seeds, and beans!**



What About That Soda?

- 1 soda daily versus <1 monthly has RR=1.83 (CI: 1.42-2.36) of type 2 DM
- Risk increases by 18% for every additional soda/day
 - 25% for artificially sweetened (bias issue)
- 1.8 million new diagnoses of DM in US over 10 years are “due to” sweetened beverages



Imamura F, BMJ 2015;351:h3576.
Schulze MB, JAMA. 2004;292:927-934.



Video: High-Fructose Corn Syrup

<https://www.youtube.com/watch?v=IQ-ByUx552s>



Just Standing?



- Breaking up prolonged sitting with 5 minutes of standing every half hour can improve postprandial glucose metabolism (similar effect to 5 min walks)
- Standing reduced the rise in glucose after meals by 34% ($P = .022$)
- Walking after meals achieved a 28% reduction ($P = .009$).

Henson, 2015 Diabetes Care

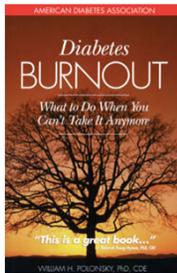


Sleep and Diabetes

- To sleep, perchance to HEAL....
- Sleep debt causes:
 - Nearly 40% decrease in glucose tolerance
 - ↓ IV glucose tolerance, ↓ response to insulin
 - Elevated HgbA1C.
 - > 50% Higher insulin curves after AM meal
- *Sleep curtailment is an important, modifiable risk for the metabolic syndrome, diabetes and obesity.*



Cognitive Behavioral Therapy and Diabetes



MUST address critical motivational, psychosocial, and personal experiences of patients with diabetes

It's not what they know, but how strongly they feel they are capable of managing their diabetes.

CBT (Cognitive Behavioral Therapy) – those with CBT counseling lowered their A1c by 0.76%

Patient Educ Couns. 75:25e36, 2009
Diabetes Care 24:1286e92, 2001

 **Diabetes Distress Screening Scale**

	Not a Problem	A Slight Problem	A Moderate Problem	Somewhat Serious Problem	A Serious Problem	A Very Serious Problem
1. Feeling overwhelmed by the demands of living with diabetes.	1	2	3	4	5	6
2. Feeling that I am often failing with my diabetes routine.	1	2	3	4	5	6

- Diabetes-specific DISTRESS is different than depression
- Emotional burden of disease, self-care regimen, physician-related stress (access, trust, care), support.
 - Validated study
 - Score > 3 represent significant distress
 - Target intervention to specific diabetes stressor.

Ann Fam Med 2008;6:246-252.

 **Garlic Cauliflower Mash**

Ingredients:

- 1 head cauliflower, chopped into florets
- 2 cloves garlic, chopped
- 2 tablespoons extra virgin olive oil
- Salt and pepper to taste
- 2 tablespoons chives, chopped



<https://www.foodnetwork.com/recipes/food-network-kitchen/cauliflower-mash0-3563731>

How to Make It:

- Rinse and chop cauliflower.
- Steam in a steamer basket until soft, but not mushy (about 10 minutes).
- In food processor, puree steamed cauliflower, garlic, and olive oil.
- Add salt and pepper to taste. Garnish with chives.
- Serve and enjoy!

 **Spiced Raisin Cauliflower Rice**

Ingredients:

- 1 head cauliflower (6 cups chopped)
- 4-5 tablespoons coconut oil
- ½ teaspoon sea salt
- 1-2 tablespoons fresh ginger, minced (Or 1 ½ tsp ground ginger)
- 1½ teaspoon cinnamon
- 1 ½ teaspoon turmeric
- ¼ cup raisins
- 2 tablespoons slivered almonds

How to Make It:

- Rinse cauliflower, pat dry and chop into florets.
- Shred cauliflower using the largest side of a grater OR pulse the cauliflower florets in a food processor. The end product should resemble small grains of rice.
- In a large skillet, heat coconut oil over medium heat. Add spices and stir. Add cauliflower and toss until evenly coated. Sprinkle raisins on top and cook three more minutes.
- Using a spatula, turn the cauliflower over and cook another three minutes.
- Remove from heat and transfer to a large bowl before cauliflower gets mushy.
- Garnish with slivered almonds. Serve and enjoy!



Back to Tonya: What to Tell Her?

- At each table, decide on one or two important recommendations together in the next 5 minutes.



<http://www.amed.com.ar/fareas>



Patient Vignette: Tonya

- 36 year old nurse, also an Army Veteran
- Father had an Myocardial Infarction (MI) at 50
- Mother with Ductal Carcinoma In Situ (DCIS) at 38
- No smoking, no Hypertension (HTN), borderline cholesterol
- Negative mammogram and breast exams
- LOVES her non-diet soda 3 times during her shift
- Interest in reducing cardiovascular, diabetes, and cancer risks



<http://www.amed.com.ar/fareas>



Summing It Up

- Healthy lifestyle choices have a major impact on how long we live
- We can prevent a significant percentage of cancers through diet
- A diet high in plant-based foods and healthy fats can reduce our risk of cardiovascular disease, diabetes, and cancer
- Addressing sleep, activity, and mental health (in addition to nutrition) can have a significant impact on patients with diabetes

Practical Exercise

Choose a partner. Designate one team member as the provider and one team member as the patient.

Provider: Pretend that the patient comes to you and asks how nutrition can specifically prevent heart disease. Describe the step-by-step process of plaque formation and provide a few key food suggestions to prevent these steps.

Patient: Can you provide any feedback to your provider about their explanation of the benefits of nutrition for cardiovascular prevention?
