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

Whole Health for Life

Eating for Whole Health

Day 1 Morning

- Setting the Stage
- Making the Case: The Power of Food & Drink
- Food and the Gut
- Mindful Eating

VA U.S. Department of Veterans Affairs
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Whole Health for Life

EATING FOR WHOLE HEALTH: Nutrition For All Clinicians

Welcome, D.C.!

Day 1

VA U.S. Department of Veterans Affairs
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Whole Health for Life

1. Introductions

Eating for Whole Health

Your Faculty

Faculty For This Course:

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This Course Was Created By:

Whole Health for Life

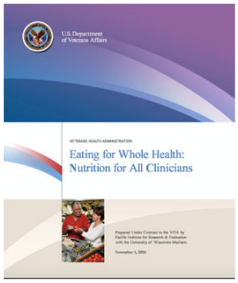
Veterans Health Administration
Office of Patient Centered Care & Cultural Transformation (OPCC&CT)

PIRE

Pacific Institute for Research and Evaluation (PIRE)

University of Wisconsin-Madison
Family Medicine and Community Health
Integrative Health

About This Course



- Created by OPCC&CT
- Whole Health training began in 2013
- Over 31,000 VA employees have taken various Whole Health courses
- Over 340 total courses
- Collaborative effort with input from Nutrition and Food Services

Community Agreements

- ✓ Minimize distractions & technology
- ✓ Silence phones
- ✓ Listen for chime for transitions
- ✓ It is okay to pass and observe
- ✓ Return on time from breaks
- ✓ Change tables for tomorrow
- ✓ Complete pulse checks, evaluations
- ✓ We will get you out on time

Community Agreements

What are your thoughts?

- ✓ Be Present
- ✓ Be Curious
- ✓ Be Silent (sometimes)
- ✓ Be Respectful
- ✓ Be Healthy
- ✓ Be Honest

Questions to Answer Together

1. How can we **network** and share our wisdom?
2. What are good sources of **info, resources, and support**?
3. What does some of the latest **research** tell us?
4. How do clinical practice, Nutrition and Food Services, Functional Nutrition, and Whole Health **interconnect**?
5. How does this all fit into **care for Veterans**?
6. How can we empower Veterans to focus on Food & Drink more themselves?

Things We Considered While Creating This Course

- Diverse background of participants
- Focus on the Whole Health approach
- Depth of nutritional information
- Lecture versus discussion (wisdom of the crowd)
- Importance of making lasting connections today
- Controversy of recommendations: regional variation in nutrition practices

Who is in attendance today? Please stand as we name your specialty

- 65+ Participants!
- Some Specialties Represented:
  - Dietitians
  - Mental Health Professionals
  - Social Workers
  - Nurses
  - Physicians, NPs, and PAs
  - Physical Therapists and Occupational Therapists
  - Pharmacists
  - VA Administrators
  - Fit Consultants
  - Move Coordinators
  - Whole Health Partners, Coaches, Peer Support Specialists

Photo credit: Depositphotos_4779351

Veterans Shaping The VA

Small Group Introductions

<u>Briefly</u> introduce yourself:

- Your name
- Your role at VA
- Answer the following:
  1. Name one food you really love *and* one food you really despise…

Photo credit: Depositphotos_4779351

Large Group Introductions

<u>Briefly</u> introduce yourself:

- Your name
- Your role at VA
- Name one food you really love or one food you absolutely despise

Photo credit: Depositphotos_4779351

Important Considerations

- We are here to share information and discuss Whole Health, NOT to tell you how to practice
- This does not supersede the various nutrition recommendations you already use
- We want to honor the work of NFS, NCP, and other groups who have been working with many of the aspects of Whole Health for a long time
- Always honor scope of practice, and practice within your comfort zone

Setting Intentions

✧ GOOD: Understand the concepts of Whole Health and Functional Nutrition and their connection to your work

✦ BETTER: ...*and* learn skills

★ EVEN BETTER: ...*and* implement Whole Health for Food and Drink on your team at a team, facility, and/or systems level

✸ BEST: ...*and* apply them to your own life!

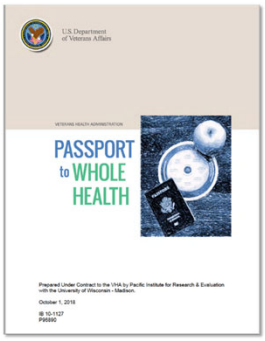
Course Resources

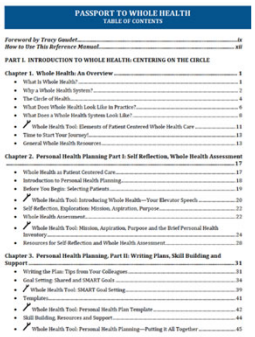
Using The Course Manual

- The course manual is meant to help guide you through the material in the PowerPoints
- Each section contains:
  - Practical Exercises
  - Clinical Pearls
  - General Resources
  - Examples of relevant whole health handouts
- We encourage you to use this manual as a quick reference tool when you return to your site

Passport to Whole Health
19 Chapters of Tips and Resources

PP. *xx*





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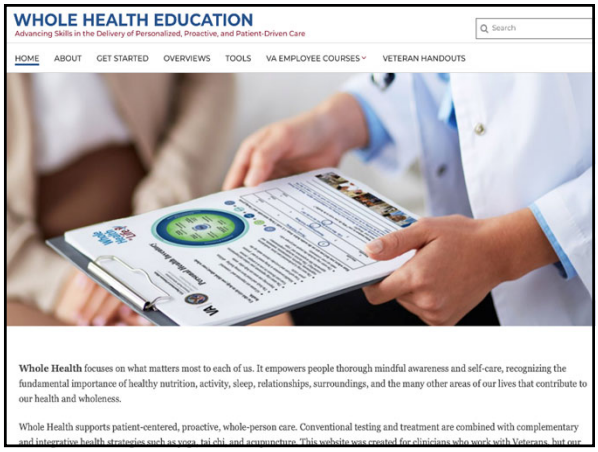
Write Your Questions On Notecards

We want to hear your questions! If we don't answer them after each lecture, please write them down on the notecards at each table and hand them to faculty prior to our question and answer panel on day two!

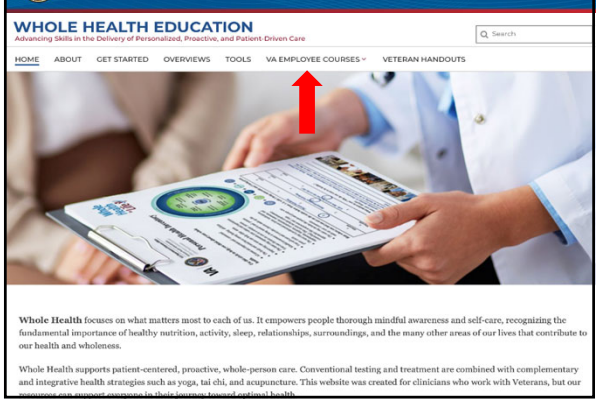
Whole Health Education Website

https://wholehealth.wisc.edu/

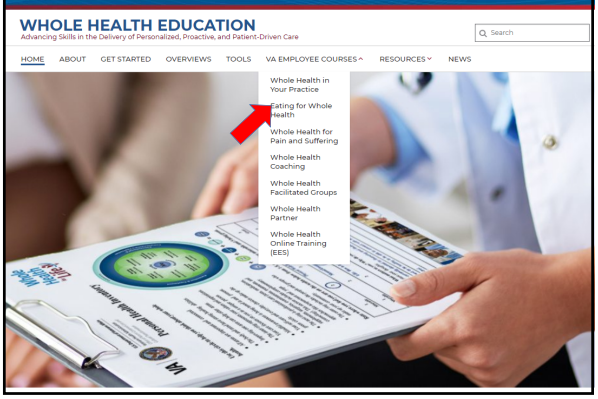
Brand new!



Whole Health Education Website



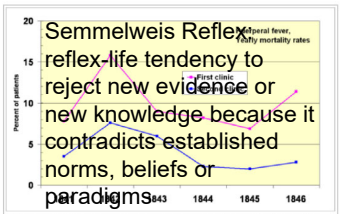
Whole Health Education Website



What are we up against?

Ignaz Semmelweis

Ignaz Philipp Semmelweis (1818–65).



Puerperal fever mortality rates for the First and Second Clinic at the Vienna General Hospital 1841–1846. The First Clinic evidently has the larger mortality rate.

Semmelweis Reflex:
reflex-life tendency to reject new evidence or new knowledge because it contradicts established norms, beliefs or paradigms

https://drawinglics.com/photos/8926437/ignaz-semmelweis-1818-65.py

Video: An Example of What We're Up Against In Nutrition

The Time Traveling Dietitian

(https://www.youtube.com/watch?v=5Ua-WVg1SsA)

What We're Up Against: Understanding Study Origins

Obesity studies

Walnut ingestion in adults at risk for diabetes: effects on body composition, diet quality, and cardiac risk measures

Valentine Yanchou Njike[1, 2], Rockiy Ayettey[1, 2], Paul Petraro[2], Judith A Treu[1, 2], David L Katz[1, 2]

Author affiliations +

Funding: California Walnut Commission

Concord grape juice, cognitive function, and driving performance: a 12-wk, placebo-controlled, randomized crossover trial in mothers of preteen children

Daniel J Lamport, Clare L Lawton, Natasha Merat, Hamish Jamson, Kyriaki Myrissa, Denise Hofman, Helen K Chadwick, Frits Quadt, JoLynne D Wightman, Louise Dye

The American Journal of Clinical Nutrition, Volume 103, Issue 3, 1 March 2016, Pages

Funding: Welch Foods

For more information:

https://www.basicbooks.com/titles/marion-nestle/unsavory-truth/9781541617315/

Similarly: Zemel, high dairy diet, and weight loss

Calcium and dairy acceleration of weight and fat loss during energy restriction in obese adults.

Zemel MB[1], Thompson W, Milstead A, Morris K, Campbell P.

Author information

1 University of Tennessee, Knoxville, Tennessee 37996-1920, USA. mzemel@uk.edu

Abstract

OBJECTIVE: Increasing 1,25-dihydroxyvitamin D in response to low-calcium diets stimulates adipocyte Ca2+ influx and, as a consequence, stimulates lipogenesis, suppresses lipolysis, and increases lipid accumulation, whereas increasing dietary calcium inhibits these effects and markedly accelerates fat loss in mice subjected to caloric restriction. Our objective was to determine the effects of increasing dietary calcium in the face of caloric restriction in humans.

RESEARCH METHODS AND PROCEDURES: We performed a randomized, placebo-controlled trial in 32 obese adults. Patients were maintained for 24 weeks on balanced deficit diets (500 kcal/d deficit) and randomized to a standard diet (400 to 500 mg of dietary calcium/d supplemented with placebo), a high-calcium diet (standard diet supplemented with 800 mg of calcium/d), or high-dairy diet (1200 to 1300 mg of dietary calcium/d supplemented with placebo).

RESULTS: Patients assigned to the standard diet lost 6.4 +/- 2.5% of their body weight, which was increased by 26% (to 8.6 +/- 1.1%) on the high-calcium diet and 70% (to 10.9 +/- 1.6% of body weight) on the high-dairy diet ($p < 0.01$). Fat loss was similarly augmented by the high-calcium and high-dairy diets, by 38% and 64%, respectively ($p < 0.01$). Moreover, fat loss from the trunk region represented 19.0 +/- 7.9% of total fat loss on the low-calcium diet, and this fraction was increased to 50.1 +/- 6.4% and 66.2 +/- 3.0% on the high-calcium and high-dairy diets, respectively ($p < 0.001$).

DISCUSSION: Increasing dietary calcium significantly augmented weight and fat loss secondary to caloric restriction and increased the percentage of fat lost from the trunk region, whereas dairy products exerted a substantially greater effect.

Zemel, high dairy diet, and weight loss

- 3 groups:
  - Controls: 10 participants
  - Low fat, high calcium diet -11 participants
  - High dairy diet – 11 participants
- 24wk RCT, 500 calorie restriction in all three groups, Journal: Obesity (2004)
- Resulting weight loss:
  - Controls: 14.5lb
  - Low fat, high calcium diet: 18.9lbs
  - High dairy diet: 24.4lbs
- Zemel Study Acknowledgment: This research was supported by the National Dairy Council.

What We're Up Against: Lobbying and Dietary Guidelines

Time Magazine January 2016

Experts Say Lobbying Skewed the U.S. Dietary Guidelines

Advisory Committee

|

USDA + Stakeholders / Steakholders

Medical Education and Nutrition

Lack of medical education on nutrition

- 2010 Academic Medicine:
  - Univ. North Carolina
  - 109 US Medical Schools
  - ¼ required nutrition course
  - 19.6 hrs nutrition education / 4yrs
- 2016 Health Promotion Practice:
  - Case Western Reserve
  - 25 US Primary Care Residencies
  - 2-3hrs of nutrition and physical activity education / year of residency

Credit: Shutterstock.com Photo ID: 560266285

Adams, *Academic Medicine*, Vol. 85, No. 9 / September 2010
Antognoli, *Health Promot Pract*, Volume: 18 issue: 5 / July 2016

Our (Un)healthy Choices Affect Our Patients

- Relative weight and dietary / activity counseling
  - If provider weighed more than patient, he/she brought up elevated BMI only 7% of the time
- Bike helmet and apple study
  - 2 instructional videos, Same core content on lifestyle
    - 1st video: control
    - 2nd video: apple on desk, wearing bike helmet, and adding 30 seconds on what physician practiced in her own life
  - Patient perspective on 2nd video: more believable, better recall, more willing to make changes

Time to Pause and Create

- This course also offers you two days as a chance to reflect and focus on your own Whole Health
- What do you need, right now, for your own well-being?

Pause

Be Present

Proceed Towards Whole Health

How do **you** define *Whole Health*?

Defining Whole Health

Patient-centered care that **affirms the importance of the relationship and partnership** between patients and their community of health care providers.

The focus is on **empowering the self-healing mechanisms** within the whole person while co-creating a personalized, proactive, patient-driven experience.

This approach is **informed by evidence** and makes use of **all appropriate therapeutic approaches**, health care professionals and disciplines to **achieve optimal health and well-being**.

Me + Self Care + Professional Care + Community = Whole Health

Core Concepts for Transforming to Whole Health

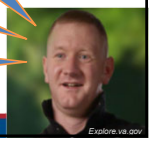
- **Holism**: People are more than a broken body part or a list of medical p…
- **Self Hea…** …heal, and mobilizi…

…etter health,

All aspects of my life are interconnected and impact my health

There are approaches that can strengthen—or weaken—my capacity to heal and stay well

Paying more attention to my body and mind helps me make better decisions in my self care



Personalized, Proactive, Patient-Driven

PERSONALIZED
A dynamic adaptation or customization of recommended education, prevention and treatment that is specifically relevant to the individual user, based on the user's history, clinical presentation, lifestyle, behavior and preferences.

PROACTIVE
Acting in advan… than just reacting; taking initiative to make things happen rather … just adjusting to a situation or waiting for … ***…es that strengthen the p… …ind-body approaches***

An eng… …are system w… patient is the source of control such that the… …are is base… needs, values, and how the patient wants to live. ***This re… …s t… change the co… …t place.***

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

Our Current "Disease Care System"

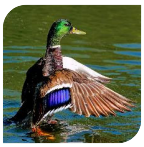


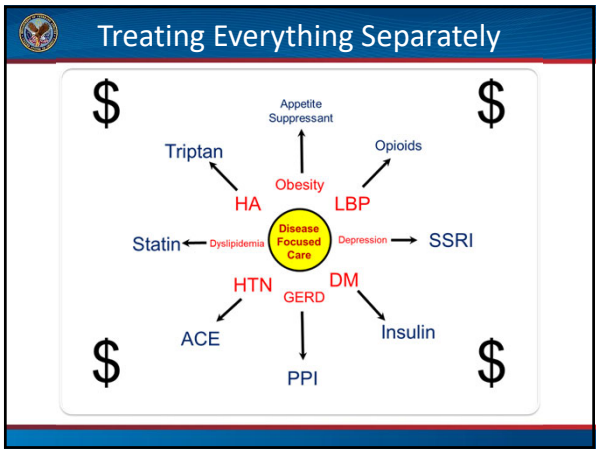
Photo credit: Vladimir via Foter.com / CC BY-NC-ND

68,000 Diagnosis Codes
(ICD-9 has 14,025)

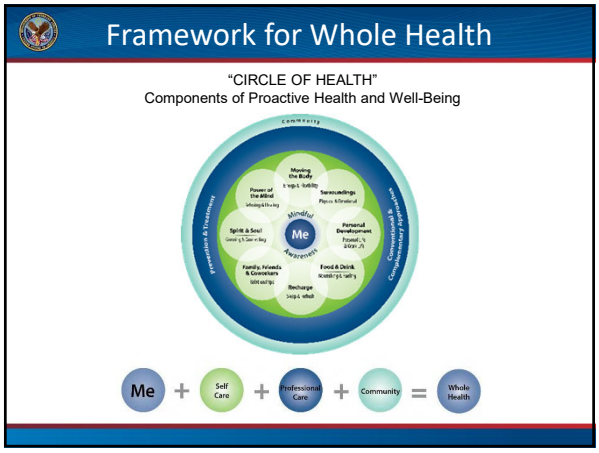
W6162XA = Struck by a duck
V9107XA = Burn due to water skis catching on fire

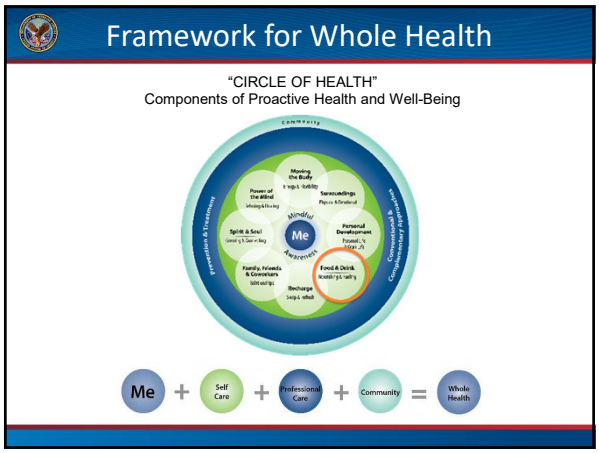
And a Few Others...

- Collision with roller skater
- Struck by an orca, left side
- Bitten by sea lion
- Sucked into a jet engine
- Prolonged stay in weightless environment
- Swimming-pool of prison as the place of occurrence of the external cause
- Hurt at the library, public
- Hurt at the opera
- Accident while knitting
- Problems in relationship with in-laws



OUR MODERN MEDICAL SYSTEM HAS FAILED MANY VETERANS





What's the matter with you?

What matters to you?

Which statement gets the best response?

Statement A

"Your A1c is clear up to 10. That means your sugars have been really high for a while, and we need to bring them down. Studies show this will put your heart, retinas, nerves, and kidneys at risk."

Statement B

"I know your goal is to dance at your granddaughter's wedding. Keeping your sugars in a good place will help your heart, legs, and the rest of your body be up for it! And it will keep that A1c number down, too."

Purpose in Life = Longer Life

- 7,108 Americans
- Ages 25-75
- Followed for 14 years
- Answered three questions:
  1. I don't wander through life
  2. I think about the future
  3. I feel there is still more to do in life

Hill, Psychol Sci, 2014; 25(7):1482–6.
Photo Credit: http://altfutures.com/what-we-do/visioning/

Purpose in Life = Longer Life

pp.107

- Regardless of
  - Age
  - Retirement Status
  - Relationships
  - Depression
- There was a survival benefit (hazard ratio 0.85) if answers indicated a sense of purpose

Hill, Psychol Sci, 2014; 25(7):1482–6.

Our Mission…

- Imagine and implement what you can do to move closer to a **"Whole Health Care System"**
- Practice **mindful awareness**
- Share wisdom and **network** with each other
- Clearly define what **tools & support** you need
- Explore this for ourselves: **self-care**
- Have **fun!**

MLK Jr., Spelman College April 10, 1960

"If you can't fly, then run. If you can't run, then walk. If you can't walk, then crawl. But whatever you do, you have to keep moving forward."

The VA Is Changing Healthcare Everywhere

Video: It's easy to connect with colleagues (and strangers)

Wanna Hangout?

(https://www.youtube.com/watch?v=WwiDnLBkh_U)

Whole Health Food and Drink Bingo!

Find people in the room who match the descriptions. Write their names in the corresponding box.

WINNERS: 5 consecutive squares or 4 corners with a *different* name in each box.

BONUS: Can you fill the whole sheet?

NEW AGENDA

Day 1: Focused on foundations for whole health nutrition, mindful awareness, Gut Health, elimination Diets, practicing the "PHI," Elimination Diets, Gut Health, and Food and the Environment

Day 2: More in-depth nutrition topics including prevention, mental health, and pain in addition to mindful eating and the "PHP." We will end with a discussion of how to implement this approach in your current practice

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Whole Health for Life

Nutrition & Food Services (NFS) & Whole Health Implementation

Important Reminders & Disclaimers

- A variety of dietary approaches & topics are presented here and on WH website
  - Raise awareness & open conversation
  - Elevates the role of nutrition in Whole Health & importance of referring to RDN
- RDN provides evidence-based MNT
- Developed by OPCC&CT in collaboration with NFS.
  - NFS does not endorse or encourage clinicians to perform duties outside of their scope of practice
  - All Veterans Health Education materials must be vetted & approved by local VHEC per policy before giving to Veterans

Photo Credit: GoGraph Clip Art

Whole Health Nutrition: What does it look like?

- Personalized, proactive, patient-driven care
- Acknowledges and addresses the interconnections between the components of health & well-being
- Uses WH tools in the Nutrition Care Process:
  - Assessment includes Personal Health Inventory (PHI)
  - Intervention involves creating a Personal Health Plan (PHP)
  - Monitoring and Evaluation of "Shared Goals"
- Takes a whole foods approach to food and drink
- Recognizes power of food as medicine & body's innate ability to heal

From the Field: How RDNs are Supporting Whole Health

- Eating for Whole Health: Advanced Nutrition Class
- Anti-Inflammatory Diet Classes
- Four-Part Whole Health Nutrition Series (including food demos)
- Participate in Shared Medical Appointments for chronic pain
- Therapeutic cooking classes
- Mindful Eating and Intuitive Eating classes
- "Stop the Burn" class for GERD
- FODMAP group for IBS
- Specialized individual nutrition counseling using functional nutrition.

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Whole Health for Life

2. Making the Case: The Power of Food & Drink

Eating for Whole Health

The Power of Food and Drink: Objectives

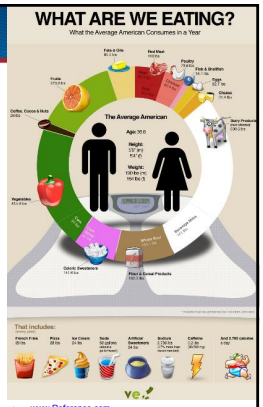
- At the end of this lecture, participants should be empowered to:
  - Discuss with patients and colleagues just how powerful a role food plays in our lives
  - Recognize the two way relationship between genetics and environment and how that affects nutrition
  - Connect food to other aspects of the whole health circle including exercise, sleep, and the power of the mind

pp127

So, how do "Food & Drink" tie into Whole Health?

In an Average Lifetime, You Will…

- Eat around 35 tons (70,000 pounds) of food
- Spend about 3 years and 8 months eating and drinking
  - 67 minutes a day
- Eat **7,000** animals, if you eat meat
- Consume 152 lb of sugar/year (6 cups/week (Standard American Diet)
- Make thousands of food choices each year



- www.Reference.com
- https://www.bls.gov/news.release/atus.t12.htm
- https://www.Vegetariancalculator.com
- https://www.dhhs.nih.gov/dphs/nhgri/documents/sugar.pdf

Those Food Choices Have Power

- They alter you at a molecular level
- They change your gene expression
- They affect your health
  - They cause disease
  - They prevent disease
  - They cure disease
- They have a context
  - People you eat with
  - Mindfulness
  - Safety
  - Sustainability
  - Culture

Photo Credit: https://www.petfamily.it/speciali/pet-allergia-e-intolleranza-alimentare.html

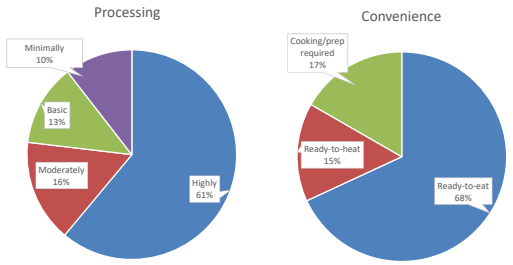
What Do We Eat?

1. Grain-based desserts
2. Yeast breads
3. Chicken/chicken dishes
4. Soda/energy/
5.
6. ribs
7. P white potato
8. To
9. Be beef dishes
10. Dairy desserts
11. Chips (potato/corn/other)
12. Burgers
13.
18. Candy
19. Nuts & seeds
20. Eggs/egg dishes

Standard American Diet
It's SAD ☹

Report of the 2010 Dietary Guidelines Advisory Committee

What Do We Eat?



Poti JM, Mendez MA, Wen Ng S, Popkin B. Am J Clin Nutr. May 2015.

Food and Addiction

Illustration: Ruth Marten

- High fat, high palatability foods
- Disrupt appetite system
- Influence pleasure and reward centers

*"Moreover, palatable high-fat foods (such as those of the cafeteria diet) can induce **addiction-like deficits** in brain reward function and are considered to be an important source of motivation that might drive overeating and contribute to the development of obesity. The mechanism of neural adaptation triggered by palatable foods is similar to those that have been reported for **nondrug addictions and long-term drug use**."*

De Macedo, Adv Pharmacol Sci, 2016;7238679.

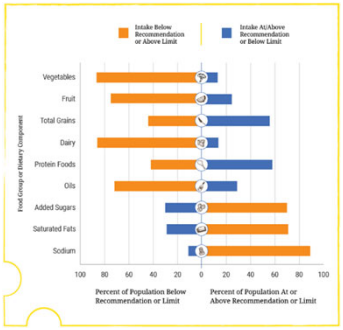
- https://www.psychologytoday.com/us/blog/motivated-behaviors/201908/how-overeating-changes-the-brain

The Frito Lay Mechanical Mouth

- Dallas Facility: 500 chemists, psychologists, techs
- Budget: $30 million / year
- Focus: crunch, mouth feel, aroma of Fritos, Cheetos
- $40,000 replica of human mouth with sensors
- Discovered the PERFECT BREAK POINT for chewing crunchy foods

Photo Credit: *"The Girl Who Ate Everything"*

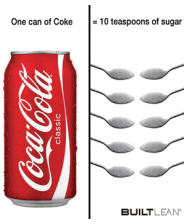
Percent of US Population Who are Below, At or Above Dietary Goals or Limits



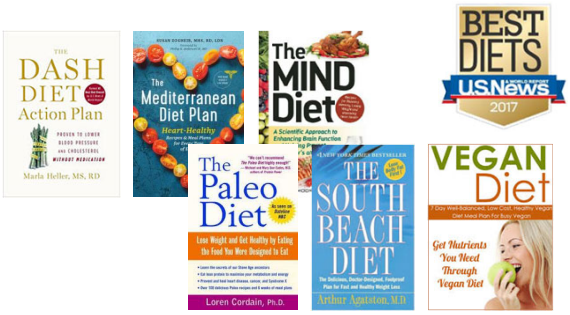
Dietary Guidelines for Americans 2015-2020, Eighth Edition

Sugar: Recommendations vs. Reality

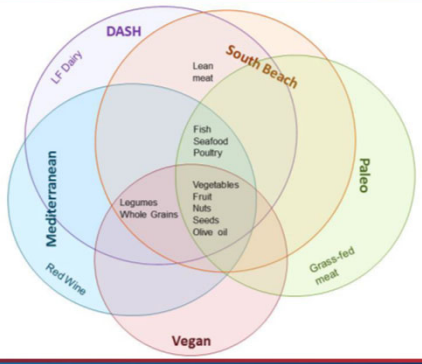
- Avg American = 22 teaspoons (88 grams)/day
- AHA recommends limits (no more than):
  - Men → 9 tsp (36 gm)
  - Women → 6 tsp (24 gm)
  - Children → 3-6 tsp (12-24 gm)



So many diets, so little time…



Commonalities Between Common Diets

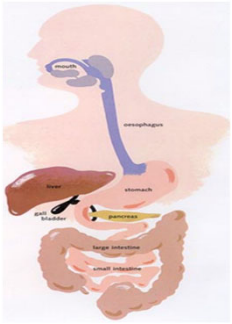


Blue Zones

Photo Credit: Blue Zones

- Barbagia region of Sardinia
- Ikaria, Greece
- Nicoya Peninsula, Costa Rica
- Seventh Day Adventists (Loma Linda, CA)
- Okinawa, Japan

Digestion on a larger level



- Mouth……<1min
- Esophagus……4-8 seconds
- Stomach……1-5 hours
- Small Intestine……2-4 hours
- Large Intestine……5-70 hours
- Liver, Gallbladder, Pancreas

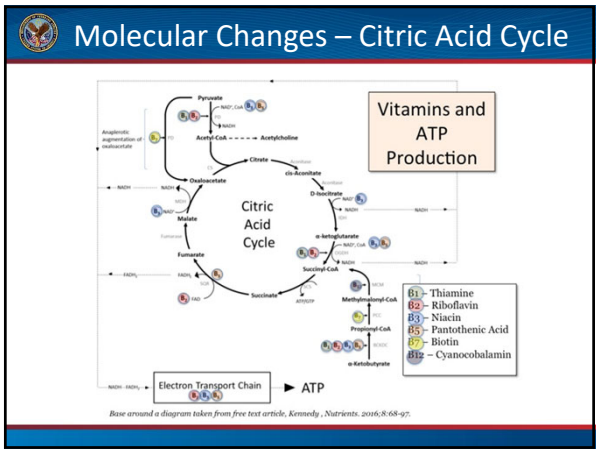
Photo Credit: https://loveyourgut.com/what-does-the-gut-do/the-digestive-system/

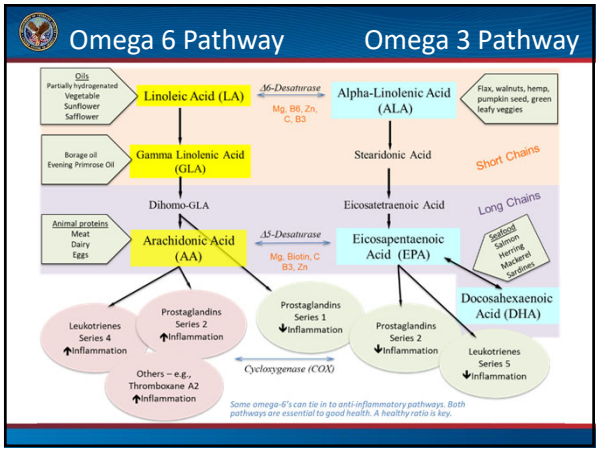
Let's Talk Molecules!
You now is not *you* 10 years ago

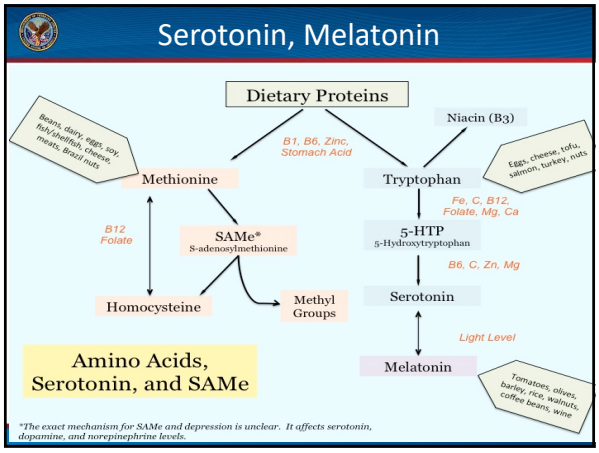
- GI Tract……5 days
- Gums ……14 days
- Body water (72% of our molecules)…
- Skin ……
- Red…
- Bl…
- Live…
- Bon… …7-10 years
- Cere… ……More constant

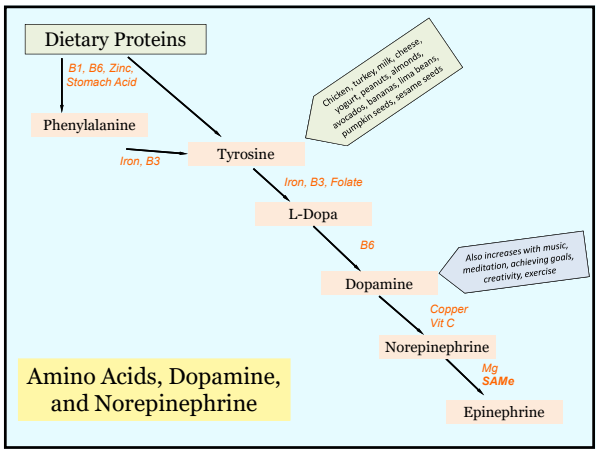
And where do you get the new molecules?
Food & Drink (and air)

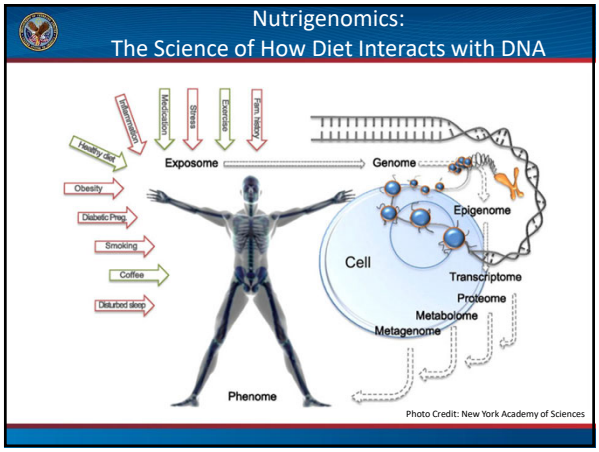
http://www.archive.org/stream/annualreportofbo1953smit/annualreportofbo1953smit_djvu.txt
http://science.howstuffworks.com/life/cellular-microscopic/does-body-really-replace-seven-years1.htm

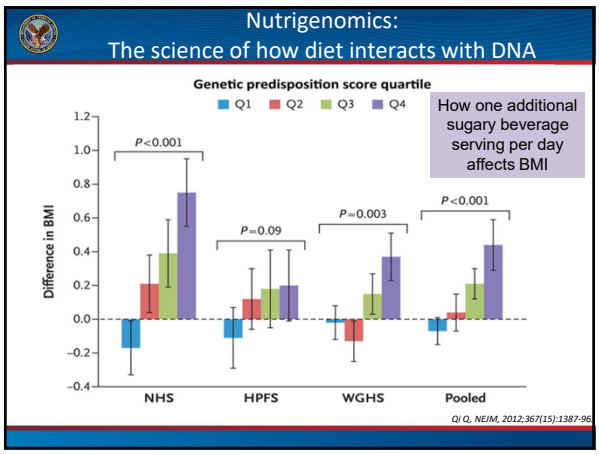

Molecular Changes – Citric Acid Cycle
Vitamins and ATP Production
Citric Acid Cycle
Pyruvate
Acetyl-CoA
Acetylcholine
Citrate
cis-Aconitate
D-Isocitrate
α-ketoglutarate
Succinyl-CoA
Succinate
Fumarate
Malate
Oxaloacetate
Methylmalonyl-CoA
Propionyl-CoA
α-Ketobutyrate
B1 - Thiamine
B2 - Riboflavin
B3 - Niacin
B5 - Pantothenic Acid
B7 - Biotin
B12 - Cyanocobalamin
Electron Transport Chain
ATP
Base around a diagram taken from free text article, Kennedy , Nutrients. 2016;8:68-97.


Omega 6 Pathway
Omega 3 Pathway
Oils
Partially hydrogenated
Vegetable
Sunflower
Safflower
Linoleic Acid (LA)
Δ6-Desaturase
Mg, B6, Zn, C, B3
Alpha-Linolenic Acid (ALA)
Flax, walnuts, hemp, pumpkin seed, green leafy veggies
Borage oil
Evening Primrose Oil
Gamma Linolenic Acid (GLA)
Stearidonic Acid
Short Chains
Dihomo-GLA
Eicosatetraenoic Acid
Long Chains
Animal proteins
Meat
Dairy
Eggs
Arachidonic Acid (AA)
Δ5-Desaturase
Mg, Biotin, C B3, Zn
Eicosapentaenoic Acid (EPA)
Seafood
Salmon
Herring
Mackerel
Sardines
Docosahexaenoic Acid (DHA)
Leukotrienes Series 4 ↑Inflammation
Prostaglandins Series 2 ↑Inflammation
Prostaglandins Series 1 ↓Inflammation
Prostaglandins Series 2 ↓Inflammation
Leukotrienes Series 5 ↓Inflammation
Others – e.g., Thromboxane A2 ↑Inflammation
Cyclooxygenase (COX)
Some omega-6's can tie in to anti-inflammatory pathways. Both pathways are essential to good health. A healthy ratio is key.

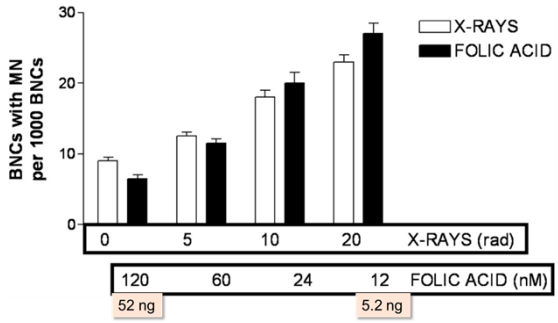

Serotonin, Melatonin
Dietary Proteins
Beans, dairy, eggs, soy, fish/shellfish, cheese, meats, Brazil nuts
B1, B6, Zinc, Stomach Acid
Niacin (B3)
Eggs, cheese, tofu, salmon, turkey, nuts
Methionine
Tryptophan
Fe, C, B12, Folate, Mg, Ca
B12
Folate
SAMe*
S-adenoeylmethionine
5-HTP
5-Hydroxytryptophan
B6, C, Zn, Mg
Homocysteine
Methyl Groups
Serotonin
Light Level
Melatonin
Amino Acids, Serotonin, and SAMe
Tomatoes, olives, barley, rice, walnuts, coffee beans, wine
*The exact mechanism for SAMe and depression is unclear. It affects serotonin, dopamine, and norepinephrine levels.


Dietary Proteins
B1, B6, Zinc, Stomach Acid
Phenylalanine
Iron, B3
Tyrosine
Chicken, turkey, milk, cheese, yogurt, peanuts, almonds, avocados, bananas, lima beans, pumpkin seeds, sesame seeds
Iron, B3, Folate
L-Dopa
B6
Dopamine
Also increases with music, meditation, achieving goals, creativity, exercise
Copper
Vit C
Norepinephrine
Mg
SAMe
Epinephrine
Amino Acids, Dopamine, and Norepinephrine


Nutrigenomics:
The Science of How Diet Interacts with DNA
Inflammation
Medication
Stress
Exercise
Fam. history
Healthy diet
Obesity
Diabetic Preg.
Smoking
Coffee
Disturbed sleep
Exposome
Genome
Epigenome
Cell
Transcriptome
Proteome
Metabolome
Metagenome
Phenome
Photo Credit: New York Academy of Sciences


Nutrigenomics:
The science of how diet interacts with DNA
Genetic predisposition score quartile
Q1
Q2
Q3
Q4
How one additional sugary beverage serving per day affects BMI
Difference in BMI
1.2
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
−0.4
P<0.001
P=0.09
P=0.003
P<0.001
NHS
HPFS
WGHS
Pooled
Qi Q, NEJM, 2012;367(15):1387-96.

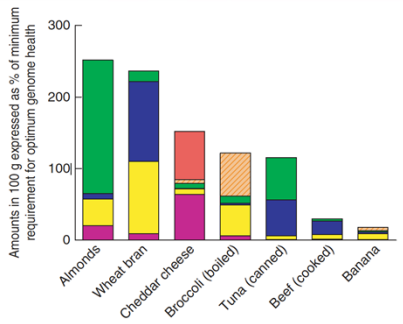
Nutrition Affects Your Genes....A LOT!



Fenech M, Am J Clin Nutr 2010;1438S-1454S.

Nutrient	Role	If Deficient...
C and E	Antioxidants	More DNA breaks and oxidation
B2, B6, B12, Folate	DNA methylation, folate recycling	Uracil not put in right, less methylation, chromosome breaks
B3	Telomere length, DNA cleavage	DNA nicks, chromosome breaks, mutagen sensitivity
Zn	Co factor for many enzymes	DNA oxidation and breaks
Iron	Cofactor	Reduced repair, oxidative damage
Mg	Co factor, microtubules, excision repair	Replication fidelity, reduced repair
Ca	Mitosis	Segregation and mitosis errors

Fenech M, Am J Clin Nutr 2010;1438S-1454S.



Red=Ca; Yellow=Folate; Blue=Niacin; Green=Vit E; Striped=B-Carotene

Bull C, Proc Nutr Society, 2008;67:146-56

Other Nutrients Affect Genes Too

"...changes in dietary fatty acids intake and composition can have a significant impact on cellular adaptive response capacity by gene transcription changes in humans."

-Afman, Prog Lipid Res, 2012;51:63-70.

And of course, proteins are built into enzymes...

Other Nutrients Affect Genes Too

Add slide here on SNPs and diet

Perinatal Famine And DNA Methylation

- Study of children born during the Dutch Hunger Winter 1944-1945
- Daily rations during this period: 667 calories (12% protein, 19% fat, 69% carb)
- **Six decades later**, 60 subjects and 60 sibling controls (within 5 years of age)
- Results: DNA methylation rates of IGF2 were lower in famine subjects
- Interpretation:
  - DNA methylation of the gene IGF2 reduces its expression (renders it inactive)
  - So decreased methylation increases IGF2 expression
  - This leads to impaired fasting glucose later in life, which is associated with many chronic diseases including obesity and diabetes.
  - Preeclampsia results in reduced IGF2 methylation; folic acid supplementation prior to and during pregnancy increases IGF2 methylation (Heijmans, 2008)

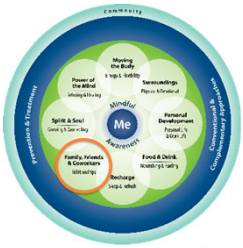
Knowing that food and drink are so important,
HOW DO WE HELP OTHERS MAKE GOOD CHOICES?

Photo Credit: Octane Creative

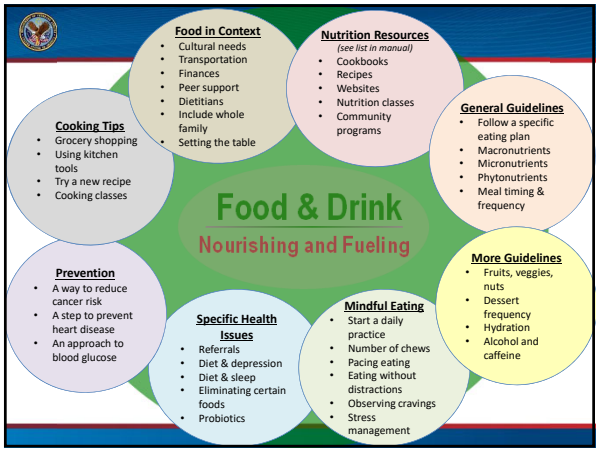
Photo Credit: Keasha LeClear Morse

Framework for Whole Health

"CIRCLE OF HEALTH"
Components of Proactive Health and Well-Being



Me + Self Care + Professional Care + Community = Whole Health



Connecting nutrition to the rest of the circle

Small Group Exercise: Best...Meal...Ever

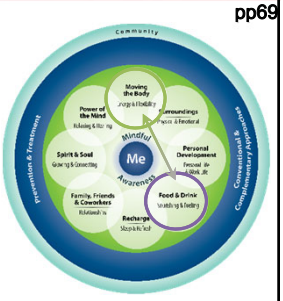
Each person takes a few minutes. Choose someone to go first.

- Remind everyone of your name
- Describe one of your best meals ever
- What made it great?
- Looking at the Circle on Page 5, what other areas of the circle were part of the experience?

Interconnections: Working Your Body

pp69

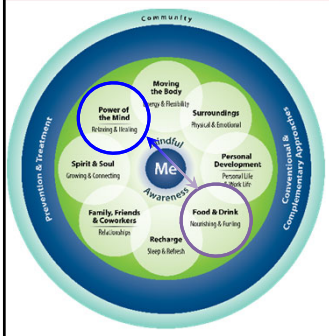
- Eating before exercising can increase carbohydrate breakdown during exercise
- Exercise-trained men have appetite suppression after exercise (everyone's different)
- Exercise is complex – it doesn't affect appetite the same way
  - Aerobic Exercise induced anorexia
    - ↓Ghrelin (stomach growlin')
    - ↑Satiety peptides (YY and GLP-1)
    - *Eating after exercising may reduce calorie intake



Howe SM, Nutrients, 2014;6(11):4935-60.
Blundell HJE, Obes Rev, 2015;16(Suppl 1:67-76.
Schubert MM, Sports Med, 2014;44(3):387-403.
Edinburgh, Endoc and Metabolism, 2018;315(5):1064-1074

Interconnections: Power of the Mind

pp203



- Yale "Milkshake Study"
- 46 students
- EVERYONE drank a 380 calorie shake
- Measured ghrelin levels before and after
- Two types of shakes...

Crum. Health Psychology, 2011; 30(4):424–429.

Indulgence Shake – 620 Calories

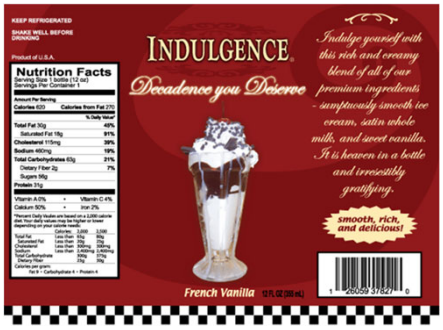


Photo Credit: "Mind Over Milkshakes: Mindsets, Not Just Nutrients, Determine Ghrelin Response"

Sensible Shake – 140 Calories

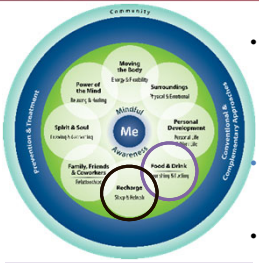
Photo Credit: "Mind Over Milkshakes: Mindsets, Not Just Nutrients, Determine Ghrelin Response"

A Tale of Two Milkshakes: What They Found

- Same nutrients and calories in the shake, but...
- Ghrelin declined much faster with "Indulgent" shake
- Stayed fairly level with "Sensible" shake
- Elevated ghrelin means
  - Increased calorie consumption
  - Increased body weight and fat gain
  - Decreased energy expenditure
  - Less adipose tissue use
- ***Nutritional value mattered less than expectation***

Crum. Health Psychology, 2011; 30(4):424–429.

Interconnections: Recharge



"Sleep is not a waste of time–its beneficial effects far exceed the restoration and maintenance of tissue structure and function."

pp157

- Leptin (Left you thin; more=skinnier)
  - 18% **decrease** if 2 nights of <4 hrs sleep versus 2 nights with 10 hrs
  - Lower in 'short sleepers' in general
- Ghrelin (Growlin' stomach; more = gain weight)
  - 28% **increase**
- Modern sedentary activities increase food intake–video games, TV, computer work
  - **...but NOT sleep**

Spiegel K, Ann Intern Med 2004;141:846-50.
Caput JP, Curr Opin Clin Nutr Metab Care, 2010;13:601–607.

Interconnections: Recharge

- In Children:
  - Sleep duration affects body fat composition in young adult women (Bailey, 2013)
  - Shorter sleep duration is associated with higher risk of obesity (Hart, 2012) (Bell, 2010) (Chen, 2008)
- In Adults:
  - After 8 days of reduced sleep, subjects consumed +559 more calories per day on average (Calvin, 2013)

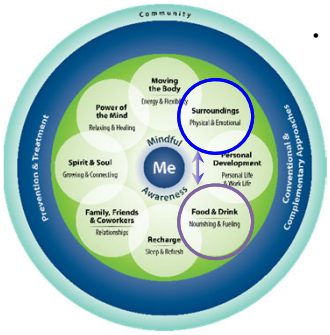
Interconnections: Recharge

- Small study from England (n=42)
- Population: short sleepers (5-7 hours)
- Intervention: Extra 90 minutes of sleep per night
- Followed for one week
- Decreased sugar intake by 9.6 grams (95% CI -16.0—3.1) compared to controls
  - 4.2 grams is 1 teaspoon

Al Khatib HK et al. Am J Clin Nutr, 2018;1:107(1):43-53.

Interconnections: Surroundings & Food

pp89



- Consider the layout of a typical grocery store…
  - Fresh baked goods at the front
  - Dairy products and "essentials" at the back
  - Size of carts (doubling size increased consumption by 40%)
  - Walking through an aisle conditions us to continue zig-zagging

(Shun 2001)

Interconnections: Surroundings and Food

- Products you are more likely to buy are on the right side of the aisle; expensive products are at eye level
- Kids products are at children's eye level
- Sample products are positioned to slow you down near new products
- Warm colors (on outside) attract people into the store

Photo Credit: Food Marketing Institute

(Shun 2001)

Interconnections: Surroundings and Food

- Cool colors (on inside) encourage slowing down, buying more products
- Slower music reduces pace; people buy more items
- Classical music results in more expensive purchases
- Checkout requires exposure to target products with higher margins
- Shopping value cards track your purchases

Photo Credit: Food Marketing Institute

(Shun 2001)

Interconnections: Surroundings and Food

We make up our minds about products within 90 seconds.
Up to 90% of that first impression is influenced by color.

(Singh, 2006)

So many more connections…

~~Food is Medicine~~
Food is More Than Medicine

Photo Credit: Canva Photos

Summing it up

- Food & Drink choices influence us at all levels
- You truly are what you eat
- Genetic expression is affected by nutrition
- Food & Drink is connected to all the aspects of self-care
- Nutrition has a powerful influence over our health at many levels, and the circle of health provides one tool for exploring these levels

Practical Exercise

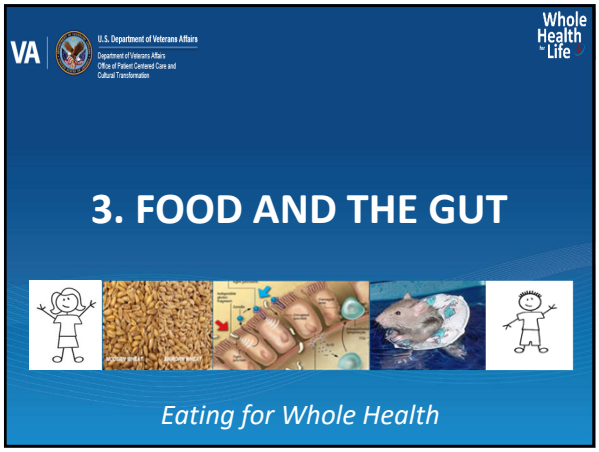
Throughout this module, we discussed how important food and drink can be, and we recognized that because we spend approximately 67 minutes eating and drinking every day, we take the importance of this process for granted.

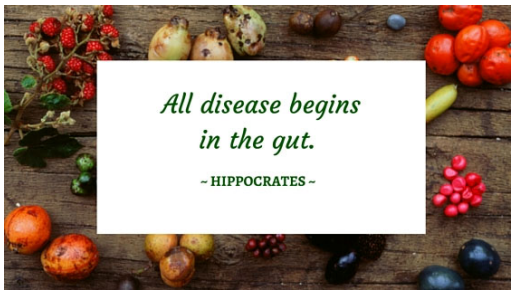
Consider your own daily routine during the work week. Are there moments when you rush through eating/drinking? Do you feel you take nutrition for granted at any point during the day? If so, what are ways you can be more thoughtful about eating and drinking?

Questions?

Movement Experience And Break!

(Special thanks to Jennifer Rapien)





Food and the Gut Objectives

Post-module:

- Discuss the relationship [& interrelationship] between the **gut** and the **nervous system**
- Identify the importance of **gastric acidity**
- Describe the relationship between **gut function and inflammation**
- Name **three** functions of the gut microbiome

Patient Vignette: Lucky Sarah

- Healthy mentally and physically
- Late 20's
- Stable job, enjoys work
- Strong support system
- Happy, optimistic

Patient Vignette: Joe - GI

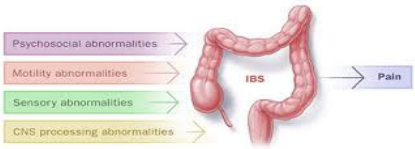
- Health concerns, mental & physical, after returning from Iraq- IBS (treated for infection)
- Early 30's
- Lacks career stability & concerns of inadequate skill set
- Absence of social support/relationships
- Anxious, poor outlook

Key Questions to Ask

- Disruption to the normal GI ecosystem?
- Potential triggers?
  - Infection
  - Trauma (physical, emotional)
  - Meds like antibiotics/chemo
  - Chronic Stress
  - Surgery
- Chronic Fatigue Syndrome (CFS)
  - Common after severe infection
  - Cytokine activation, inflammatory response
  - Save energy

Pathophysiology

Diseased versus healthy gut.
What's going on?

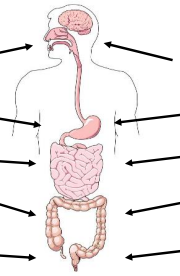


Compare and Contrast

OPTIMAL HEALING ENVIRONMENT FOR THE G.I. TRACT

Sarah

- + balance
  - Peace. SNS / PNS
- Proper acidity
- Healthy mucous layer
- Intact G.I. barrier
- Low bacterial growth
- Symbiosis
- Regular evacuation



Joe

- – balance
  - Stress. ↑ SNS tone
- ↑ or ↓ acidity
- Poor mucous layer
- Increased permeability
- High bacterial growth
- Dysbiosis
- Irregular evacuation

Video: How a Bean Becomes a Fart From: Men's Health

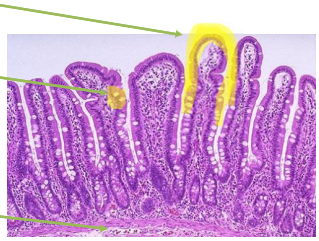
http://www.bing.com/videos/search?q=how+a+bean+becomes+a+fart&view=detail&mid=24F69F2818F99FFAE72724F69F2818F99FFAE727&FORM=VIRE

The Enterocyte

Enterocytes
- Regenerate every 3-4 days

Glycocalyx membrane
- Goblet cells secrete mucous to protect the GI tract

Peyer's Patches (GALT)
- **G**ut- **A**ssociated **L**ymphoid **T**issue mediates immune tolerance or defense against pathogens

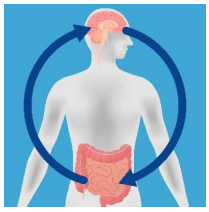


INFLAMMATION

Gut-Brain Axis

Gut to Brain

- Neurotransmitters
  - Serotonin
  - Dopamine
  - Glutamate
  - Norepinephrine
  - GABA
- Nitric Oxide
  - Lactobacilli
- Short Chain Fatty Acids
  - Learning
  - Memory



Brain to Gut

- Stressed SNS
  - Altered gut motility
  - Less acid produced
  - ↓ Mucous production
  - social stressors & gut flora – quick change!
  - Impairs PSNS from digestion!
- Non-stressed PSNS
  - Normal motility
  - better absorption
  - Improved elimination

CNS can **change** gut permeability!!

Video: How Stress Affects our Body

https://youtu.be/v-t1Z5-oPtU

Stomach Acid – Many Functions!

Chemical digestion

- Stomach acid & enzymes → food & proteins

Protective mechanisms

- Kills "bad" bacteria (invaders)

Improves absorption

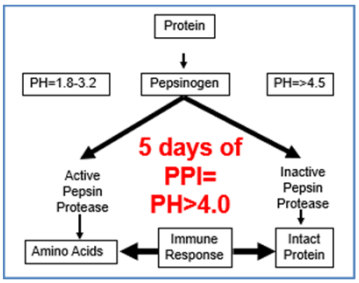
- Minerals!

Controls lower esophageal sphincter

- Low pH in stomach = better!

Low acid = Malabsorption, infection, dyspepsia

Stomach Acid Activates Pepsin



PPI = proton pump inhibitor

15 million Americans spent $10 BILLION on PPIs in 2015

Alternatives to PPI?
- H2 blockers
- Supplements
- Avoid Trigger foods
- STRESS MGMT

Chronic Acid Suppression Risks

- Infection
- Small Intestinal Bacterial Overgrowth (SIBO) & Eosinophilic esophagitis (EOE)
- Poor mineral absorption
  - Iron → anemia
  - B12 → fatigue, neuropathy
  - Magnesium → heart arrhythmia
  - Calcium → bone fracture
- Increased risk of heart and kidney dysfunction
- Memory Loss

2016 JAMA Study:
PPI use and Risk of CKD

- Findings -

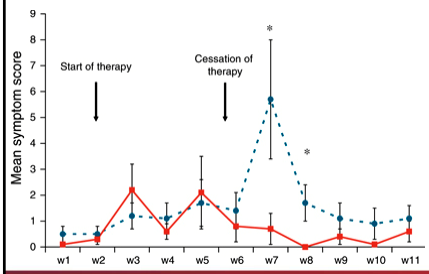
PPI use = increased risk of CKD!

- ↑ regardless of clinical, economic & social parameters
- ↑ risk than H2 blockers
- Higher dose of PPI = higher risk of kidney disease
- White, obese, on multiple medications

Rebound Dyspepsia W/ D/C of PPI

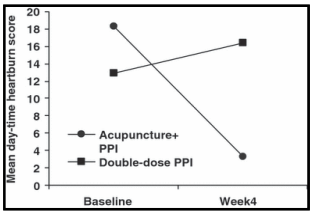
So… how to we help patients get off of PPIs?

Ideas?



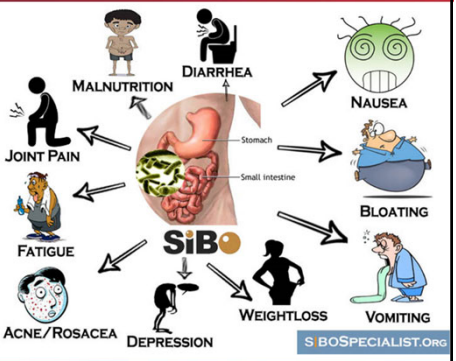
How to Stop a PPI

- Slow taper off PPI
- Get energy moving down and out with:
  - Acupuncture *(Aliment Pharmacol Ther 2007)*
  - Exercise
  - Stress management
  - Modify diet
    - Elimination/food and symptom journaling
    - Eliminate caffeine and fatty foods
  - Acupressure???
- Supplements
  - DGL (De-Glycyrrhizanated Licorice)
  - Sucralfate (Carafate)
  - Melatonin (if symptoms ↑ at night)



Small Intestinal Bacterial Overgrowth

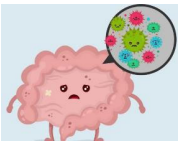
Symptoms:



SIBO

Possible Causes & Associated Disorders

- Low stomach acid
- Alcohol
- Birth control pills
- Irritable Bowel Disease
- Antibiotics
- Diabetes
- Abdominal surgery
- Celiac
- Impaired Migrating Motor Complex
- Irritable Bowel Syndrome
- Interstitial Cystitis
- Chronic Prostatitis
- Crohn's Disease
- Scleroderma
- Kidney stones
- Osteoporosis
- Anemia
- Rashes, Rosacea, Eczema
- GERD



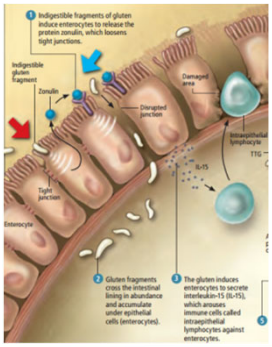
Classic Example: Autoimmune Disease

Surprises from Celiac Disease

Study of a potentially fatal food-triggered disease has uncovered a process that may contribute to many autoimmune disorders • BY ALESSIO FASANO

Requirements for Autoimmunity

1. Genetic predisposition
2. Trigger
3. Intestinal permeability = "leaky gut"

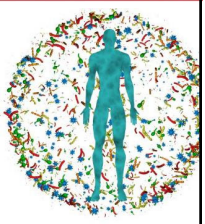


The Microbiome

pp 148

Critical Role of the Gut Microbiome

- Regulates gut motility
- Produces vitamins
- Aids in mineral absorption
  - Iron, calcium, magnesium
- Transforms bile acid & steroids
- Metabolizes xenobiotics
  - Foreign invaders
    - synthetic chemicals bug killers, BPA, styrofoam
- Destroys toxins, genotoxins, and gene mutagens



Proximal colon produces short-chain organic acids
- acetic, propionic, & butyric

Video: An example of the power of the microbiome

https://youtu.be/NI3KtR3LoqM

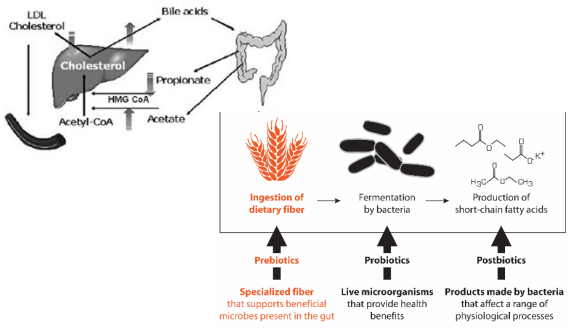
Gut Interactions

How do food, the GI tract, the enteric nervous system, and the microbiome interact?

- **Diet** = driving force in microbiome diversity & composition
  - ↑ fat, ↑ sugar diet = increased gut permeability & inflammation/autoimmune issues

- ENS communicates with CNS & microbiome
  - Gut has MORE neurons than CNS! WOW!
- Specific microbes have been identified in relation to certain metabolic host interactions
  - Ex. Lactobacillus strains impact thinking, learning & other brain mechanisms

Gut Modulation of Phytochemicals and Lipids



Minding the Microbiome

- We are comprised of 10 x more non-human than human cells!

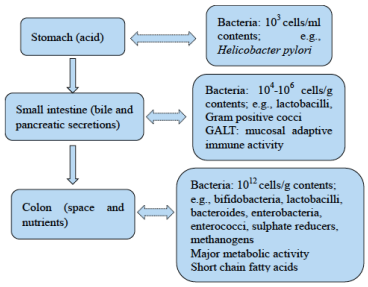


Figure 1. Reciprocal relationship between human gut bacteria and the host.

Probiotics and Prebiotics

- Probiotic
  - live microorganisms that confer a benefit on the host
- Prebiotic
  - Nonviable (indigestible) food component conferring a benefit on the host associated with modulation of the microbiota

Probiotics

- Makes B-12 and vitamin K
- Increases absorption of minerals
- Improves digestion
- Reduces inflammation
- Helps maintain our GI epithelium

Probiotic Foods

Prebiotic Foods

- Asparagus
- Avocado
- Bananas
- Chicory
- Fruit
- Garlic
- Plantains
- Soybeans

- Green Tea
- Honey
- Jicama
- Jerusalem artichokes
- Leeks
- Legumes
- Onions
- Peas

Pioneer Bacteria

Pioneer bacteria alter gene transcription to create a favorable environment

Birth

- Vernix
  - SCFAs
  - Shed in amniotic fluid & act as prebiotic
- Vaginal Delivery
  - Colonized with vaginal and fecal flora
  - First fecal transplant!
- Cesarean Delivery
  - Delayed colonization
  - Colonized with hospital & skin bacteria

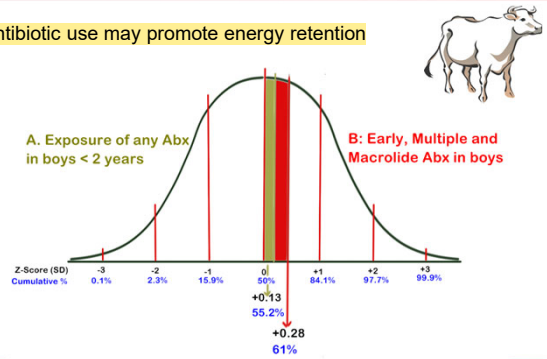
Feeding

- Breast milk
  - Colostrum provides both pro&prebiotics
  - Less diverse bacteria
  - Transferrable microbiota
- Formula
  - More diverse strains
  - Nontransferable microbiota

High microbe variability between individuals

Antibiotic Use

Antibiotic use may promote energy retention



https://www.telegraph.co.uk/science/2019/03/22/single-course-antibiotics-may-cause-irreversible-damage-crucial/

Noncaloric Artificial Sweeteners (NAS)

Kill beneficial gut bacteria

- Splenda (sucralose) use x 12 weeks **significantly decreases beneficial gut bacteria**
  - total anaerobes, bifidobacteria, lactobacilli, bacteroides, clostridia, and total aerobic bacteria
- THIS happens with only 1/5th of the SAFE level set by the FDA!

Increase risk of obesity

- 2017 study: children of women who consumed NAS on a daily basis during pregnancy were 1.6 x more likely to be born large and 1.9x more likely to be overweight/obese at age 7

Blood Sugars

- NAS interact with microbes which lead to elevations in BS
- 2 to 4 fold increase after consuming aspartame, sucralose, saccharin

Thyroid Function

- Sucralose can depress thyroid function and may effect fetal brain development

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Noncaloric Artificial Sweeteners (NAS)

Instead of NAS: eat a small amount of the real thing OR opt for safe alternatives

Avoid

- Aspartame (Equal, NutraSweet)
- Sucralose (Splenda)
- Saccharin (Sweet'n Low)
- Acesulfame potassium (SweetOne)
- Neotame (NutraSweet)

Try this: Steviosides

- Stevia-derived sweeteners extracted from the South American plant
- Bitter aftertaste

Try this: Sugar alcohols

- Fraction of the calories of sugar
- Possible digestive distress
- Best tolerated: xylitol, erythritol

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Stool Transplants

You can't make this crap up…

…or maybe you can!

RePOOPulate®

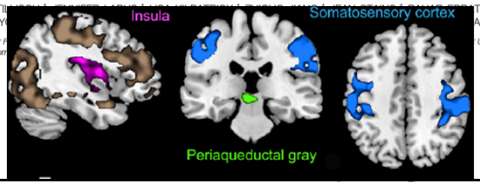
L. Rhamnosus & Mice Anxiety

Mice given Lactobacillus species broth

- Prolonged swimming
- Increased willingness to explore taller and larger areas
- Less depression
- Lower levels of stress hormones
- ↑ GABA receptor stimulation
- No Δ when vagus nerve cut
  - Vagus nerve allows GI tract to communicate with CNS

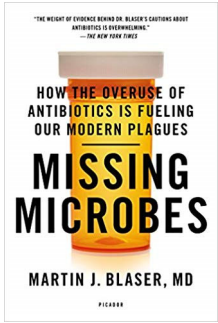
What about Humans?

Consumption of Fermented Milk Product With Probiotic Modulates Brain Activity



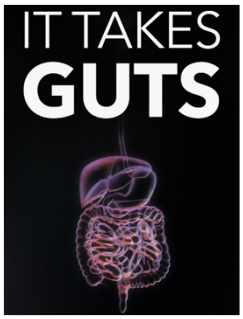
CONCLUSIONS: Four-week intake of an FMPP by healthy women affected activity of brain regions that control central processing of emotion and sensation.

Missing Microbes



- Discusses dangers of overuse of antibiotics
- Links diseases to disturbances of gut microbiome:
  - –GERD
  - –Asthma
  - –Celiac disease
  - –Obesity
  - –Rise of food allergies
  - –Inflammatory bowel disease

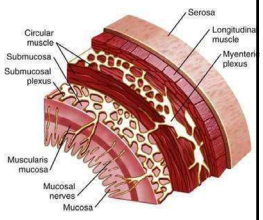
It Takes Guts (Amazon Prime)



- Discusses dangers of overuse of antibiotics
- Links diseases to disturbances of gut microbiome:
  - –GERD
  - –Asthma
  - –Celiac disease
  - –Obesity
  - –Rise of food allergies
  - –Inflammatory bowel disease

The Enteric Nervous System

- > 100 million nerve endings
- 95% of the body's serotonin
- Part of the "Gut Brain Axis"
  - includes the CNS, Hypothalamic-Pituitary- Adrenal Axis, the gut neuro-endocrine system, and the gut microorganisms
- Links emotional & cognitive centers of brain + intestinal functions
  - immune activation, intestinal permeability, enteric reflex, and entero-endocrine signaling



Gut Directed Hypnotherapy

Table 4. Change in GI symptom severity at the 3-month follow-up relative to baseline in study 1

	Total GI symptoms	Sensory symptoms	Bowel habits
Gut-directed hypnotherapy (n=45)	4.5±8.6*	2.3±4.2*	2.2±5.6
Control (n=45)	0.8±7.3	0.1±3.9	0.6±4.5

GI, gastrointestinal.
*P<0.05 vs. control group.

3 month results sustained up to 1 year!

Lindfors, P., et al., Effects of gut-directed hypnotherapy on IBS in different clinical settings-results from two randomized, controlled trials. Am J Gastroenterol, 2012. 107(2): p. 276-85.

The Five R's

Remove

(source of imbalance)

Replace

(what is missing)

Reinoculate

(beneficial bacteria)

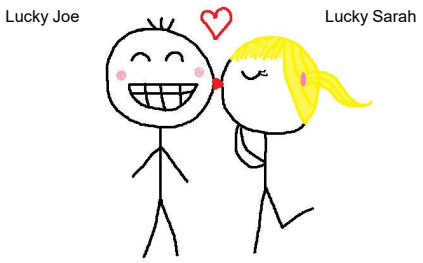
Repair

(heal gut membranes)

Rebalance

(modifications to promote healthier living)

Love is Contagious



Joe's Treatment

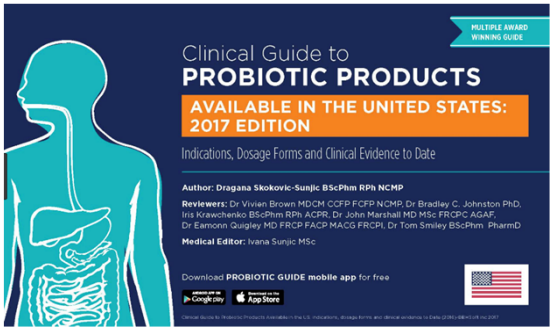
- Vocational support- Referral to Social Services
- Mindful Based Cognitive Therapy/Gut Directed Hypnotherapy
- Modifications to diet
  - more high fiber multi-colored whole foods & ↓ fat/sugar.
  - FODMAPs and food journaling
- Supplements
  - Probiotic x 4 weeks (Lacto, Bifido & Saccharomyces) + soluble fiber

What Worked?

- Food elimination
- Supplements
- Having a plan
- Increased sense of control
- Relationship

All or One?

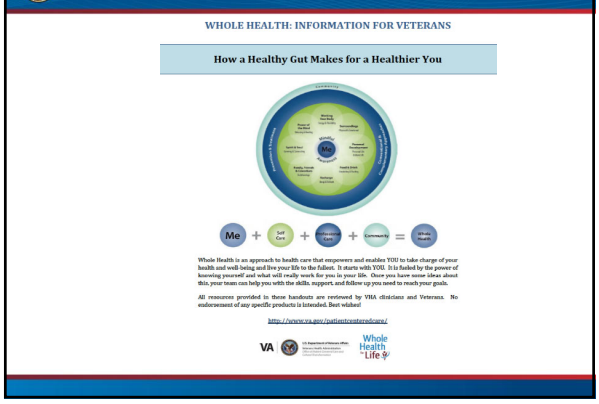
Resource: Probiotic Buying Guide



Summary: Food and the Gut

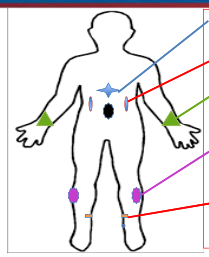
- Nutrient absorption may be affected by multiple factors, including sympathetic tone, stomach pH, and the health of the microbiome
- "The gut" represents an interplay between the gut, the immune system, and the enteric & central nervous systems
- Intestinal permeability may affect (and be affected by) multiple factors, including diet, the health of the digestive system, and systemic inflammation
- Clinician Handout: Balloon-self hypnosis for abdominal pain

Veteran Handout: Gut Health



GROUP EXPERIENCE:
Acupressure for GERD

Acupressure for GERD



CV 12 - Location: 4.0 FB above the umbilicus.

ST 25 - Location: 2 FB lateral to the navel

MH 6 Location: is located on the inside of the wrist; 3FB up from the middle of the wrist crease

ST 36 - Location: 3 FB below kneecap, one FB from the front of the shin

SP 6 - Location: 3 FB above the inside ankle, on the posterior border of the shin.
FB= one fingerbreadth

How do you do acupressure? When doing acupressure, relax in a comfortable position. Breathe deeply a few times. Use deep, firm circular pressure to massage /stimulate acupoints. Repeat once to twice daily, or as often as you like

Zhang CX, Qin YM, Guo BR Clinical study on the treatment of gastroesophageal reflux by acupuncture. Chin J Integr Med 2010 Aug;16(4):298-303

On Monday Morning…

- When a veteran brings up GI distress, consider asking about significant life stressors
- Download the handout entitled "How a healthier gut makes a healthier you"
- Try the acupressure technique to relieve GERD on yourself
- If it is available to you, consider referring veterans with GERD for acupuncture or acupressure on veterans
- Check with your facility to see if guided imagery for GI distress is available

Practical Exercise

Choose a partner at your table decide who will serve as the clinician and who will serve as the patient.

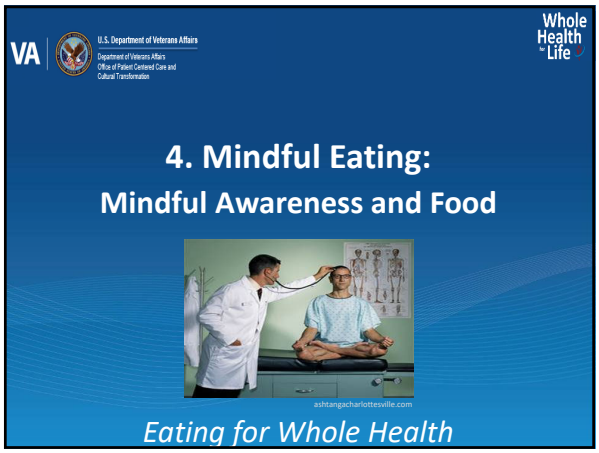
Clinician: Read out loud the Balloon Self-Hypnosis script (see handout below) to manage abdominal pain.

Patient: Follow along with the script. After the exercise is over, discuss how you felt during the exercise. Is this a helpful technique to teach your patients?

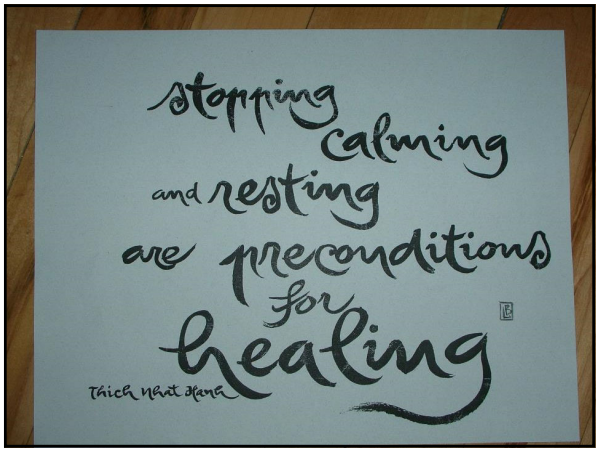
HANDOUT: BALLOON SELF-HYPNOSIS TECHNIQUE

Questions?

Note: All references for this module will be included with the slides


VA
U.S. Department of Veterans Affairs
Department of Veterans Affairs
Office of Patient Centered Care and
Cultural Transformation
Whole
Health
for Life
4. Mindful Eating:
Mindful Awareness and Food
ashtangacharlottesville.com
Eating for Whole Health

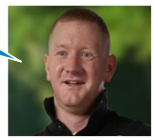
Community
Prevention & Treatment
Conventional & Complementary Approaches
Moving the Body
Energy & Flexibility
Power of the Mind
Relaxing & Healing
Surroundings
Physical & Emotional
Spirit & Soul
Growing & Connecting
Personal Development
Personal Life & Work Life
Mindful
Me
Awareness
Family, Friends & Coworkers
Relationships
Food & Drink
Nourishing & Fueling
Recharge
Sleep & Refresh


stopping calming
and resting
are preconditions
for
healing
Thich Nhat Hanh

Popular Mindful Awareness

A Core Concept

Paying more attention to my body and mind helps me make better decisions in my self-care



Definition of Mindful Awareness

Way of being

In the present moment
On purpose
Non-judgmentally

When are you most:

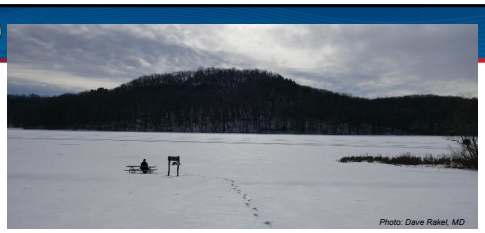
- Aware
- Present
- Centered
- Focused
- Calm

Mindful Awareness

We all have it…
the natural capacity to pay attention
with curiosity and openness.

Mindful Awareness

Mind Full, or Mindful?

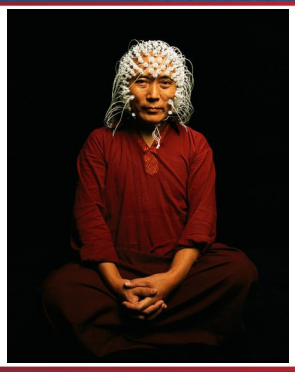


Mindful awareness is an opportunity to be
in the wholeness of life…

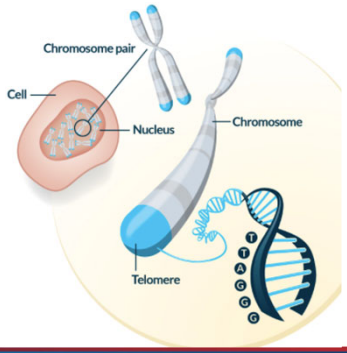
including suffering, joy, peace, unrest, creativity,
fullness, emptiness – everything…

It is not merely a technique for coping with a specific problem.

Mindful Awareness Changes Your Brain (Gamma Waves)

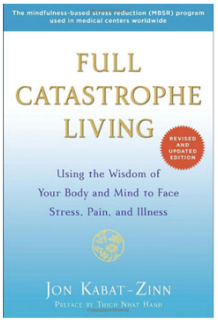


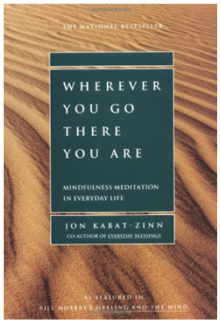
Mindful Awareness Changes your GENES



Mindful Awareness Changes your GENES

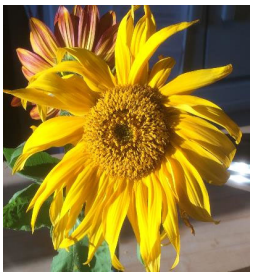
- Our DNA is our genetic 'blueprint' that our cells use to constantly renew themselves.
- Telomeres are the protective endcaps of our chromosomes.
- Telomeres shorten as we age, but telomeres can also be shortened by stress, smoking, obesity, lack of exercise and a poor diet.
- MEDITATION and MINDFULNESS can slow the rate of telomere decay, and slow the rate of aging.





Research Highlights: Mindfulness & Healthy Individuals

- 2015 Review of 29 studies (MBSR)
  - Reduces
    - Stress and anxiety
    - Depression
    - Rumination
    - Anger
    - Distress
  - Improves
    - Quality of life
    - Emotional intelligence, creativity
    - Concentration



Khoury, J Psychosom Res 2015;78:519–528.

Research Highlights: Mindfulness & Specific Health Issues

Remember, mindfulness is not merely a therapy, but it does help some conditions

- Especially responsive:
  - Chronic stress
  - Depression
  - Somatization
  - Various types of pain
  - Anxiety disorder
  - Psychosis
  - Substance use
  - Binge eating
  - Insomnia

VA » Health Care » HSR&D » Publications » Esp » Evidence Map of Mindfulness

Principles of Mindful Eating

Mindful eating involves bringing awareness to eating

- It uses all your senses in choosing to eat foods that are both satisfying and nourishing.
- It acknowledges emotions or responses to food without judgment.
- It encourages awareness of physical hunger and satiety cues.

Mindful Eating: Research So Far

- Meta-analysis of 19 studies on binge eating
  - 9 studies MBSR, MBCT (others, DBT, ACT)
  - Medium to large effects on binge eating (heterogeneous data)

Godfrey KM, J Behav Med, 2015;38:348–362.

- Sample of 26 women did MBCT training for 8 weeks
  - Decreases in "...food cravings, dichotomous thinking, body image concern, emotional eating and external eating."

Alberts HJ, Appetite 58 (2012) 8

Image credit: huffingtonpost.com

Mindful Eating: More Study Findings…

- Systematic Review, 14 articles
  - Reduced binge and emotional eating
  - *Effect on weight loss less clear*

  Katterman, Eating Behaviors 2014;15:197–204.
- Systematic review, 35 studies (23 included yoga)
  - For eating disorders in general
    - Mindfulness approaches "…improve or extend long term health outcomes in persons with eating disorders"
    - Tied to less eating, healthier eating, slower eating

  Godsey J, Complement Ther Med, 2013;21:430-9.

Mindfulness-Based Eating Awareness Training (MB-EAT)

Shutterstock ID: 188706287

- UCSF Study of 194 obese people
  - BMI 35.5, ± 3.6.
  - Over 5 ½ months
  - Everyone got diet and activity training
  - One group - MB-EAT as well
  - Decreased refined carbohydrates and had lower fasting glucose levels compared to controls

  Mason AM, J Behav Med, 2016;39:201–213.
- Another study of people with DM2 (no insulin)
  - 3 months MB-EAT or 3 months DMSE (education)
  - Both groups made positive changes

  Miller CK, Health Ed Behav, 2014;41(2):145-54.

Mindful Eating: And Even More Study Findings!

SciMedCentral Journal of Family Medicine & Community Health

Research Article

Mindful Eating and Weight Loss, Results from a Randomized Trial

Carolyn Dunn[1*], Olusola Olabode-Dada[2], Lauren Whetstone[3], Cathy Thomas[2], Surabhi Aggarwal[2], Kelly Nordby[1], Samuel Thompson[2], and Madison Johnson[1]

*Corresponding author
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Published: 01 June 2018
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80 North Carolina state employees/teachers

42 received 15wk mindfulness training

38 received no training (wait-listed for program)

Mindfulness-trained employees lost more weight and ate more mindfully based on the Mindful Eating Questionnaire (MEQ)

Tips for Mindful Eating

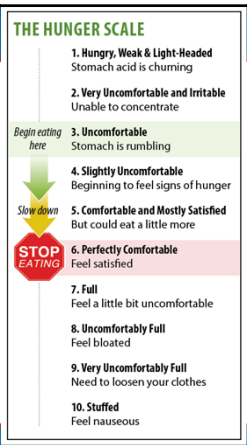
Before eating

- Sit quietly for at least 30 seconds
- Notice your breathing, your posture, your emotions, but don't judge them
- Try some mindful breathing exercises
- Take a moment for gratitude
- Pay attention to hunger or fullness

Tips for Mindful Eating

During your meal

- Eat with your non-dominant hand or chopsticks to encourage a slow pace
- Between bites, set your utensils down or take a sip of water
- Portion out meals and snacks; avoid eating out of the container
- Chew your food 10-15 times per bite – pay attention to taste, texture, and how flavors change
- Try to make the meal last at least 20 minutes



Mindfulness-Based Eating Awareness Training (MB-EAT)

- MB-EAT on adolescents
  - 6 high schools, 40 participants
  - Avg BMI 32.4, ± 9.0
  - Over 12 weeks
  - Everyone got health education class
  - One group - MB-EAT as well
  - Reduced overeating, healthier food choices (low calorie and low fat), and increased physical activity

Shutterstock ID: 188706287

Barnes VA, J Comp & Alt Med, 2016

Mindful Eating Apps

- In the Moment – Mindful Eating
- Am I Hungry?® Virtual Coach
- Eat Right Now®
- Peace with Food
- Headspace (Mindful Eating Pack)

Mindful Eating

Brief Guided Meditation Exercise

Reflections from the Mindful Eating Exercise

- What do you feel in the body after doing the eating practice?
- If you did this regularly, how might it affect your health, well-being and stress level?
- What came up for you about your relationship with food?
- How can you use Mindful Eating with Veterans?

LUNCH EXERCISE:

Consider what it took to bring this food to you. Who was involved in the growing process and production? Consider the sun and soil it took to grow the ingredients and ask yourself where in the world it came from (hopefully not a factory!). Appreciate all of what it took to bring it to your plate.