The Times They Are A-Changing

- If the American public embraced a healthier lifestyle:
  - no smoking
  - no or moderate alcohol consumption
  - limited or no exposure to toxic chemicals
  - healthy nutrition
  - balance of exercise and rest
  - stress management
  - and healthy social networks

93% of diabetes, 81% of heart attacks, 50% of strokes, and 36% of all cancers could be prevented.

**Epigenetics**

- The mapping of **human genome** was one of the greatest scientific undertakings of past century, detailing with incredible accuracy the blueprint of our species.
- It also paved the way for field of **epigenetics**, which has shown that when it comes to our genes, **nurture is inextricably linked with nature**.
- That it is the **way we live our lives - from the moment of conception to our last breath - that influences the expression of our genes**.

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**Integrative Medicine**

- Takes account of the whole person including lifestyle
- Emphasizes relationship between practitioner and patient
- Is informed by evidence
- Makes use of all appropriate therapies

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**Nutritional Guidance**

- Despite overwhelming evidence that **relatively small dietary changes** can significantly **improve health**, clinicians **seldom discuss nutrition** with patients.
- Poor nutritional intake and nutrition-related health conditions, such as **cardiovascular disease, diabetes, obesity, hypertension, and many cancers**, are highly prevalent in the United States, yet only **12% of office visits include any counseling about diet**.

Is it any wonder that people are confused?

Dietary Inflammatory Index (DII)

- Inflammation often driven by dietary patterns. An anti-inflammatory diet may reduce sub-chronic inflammation and improve cardiovascular, metabolic, and neurologic parameters.
- The Dietary Inflammatory Index is based on measuring inflammation in the body in response to specific foods (many clinical trials).
- You can take the test by downloading the app for Dietary Inflammatory Index (Itunes: DII Screener)

Dietary Inflammatory Index (DII) Ratings

<table>
<thead>
<tr>
<th>FOOD</th>
<th>SERVING SIZE</th>
<th>SERVING SIZE (GRAMS)</th>
<th>IF RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGAVE NECTAR</td>
<td>1 TBSP</td>
<td>21</td>
<td>-74</td>
</tr>
<tr>
<td>ALMOND BUTTER</td>
<td>¼ CUP</td>
<td>64</td>
<td>100</td>
</tr>
<tr>
<td>CHEESE, CHEDDAR</td>
<td>1 OUNCE</td>
<td>28.35</td>
<td>-20</td>
</tr>
<tr>
<td>CHICKEN BREAST, RSTD</td>
<td>3 OUNCES</td>
<td>85</td>
<td>-19</td>
</tr>
<tr>
<td>MILK, WHOLE</td>
<td>1 CUP</td>
<td>246</td>
<td>-46</td>
</tr>
<tr>
<td>OLIVE OIL</td>
<td>1 TBSP</td>
<td>14</td>
<td>74</td>
</tr>
<tr>
<td>ONIONS, COOKED</td>
<td>½ CUP</td>
<td>105</td>
<td>240</td>
</tr>
<tr>
<td>RICE, WHITE</td>
<td>1 CUP</td>
<td>158</td>
<td>-153</td>
</tr>
<tr>
<td>SPINACH</td>
<td>1 CUP</td>
<td>30</td>
<td>75</td>
</tr>
<tr>
<td>SALMON, SOHO BAKED</td>
<td>3 OUNCES</td>
<td>85</td>
<td>450</td>
</tr>
<tr>
<td>TURMERIC</td>
<td>½ TSP</td>
<td>1.5</td>
<td>338</td>
</tr>
</tbody>
</table>

Mediterranean Dietary Pattern and Memory

- Mediterranean and DASH diets have been associated with lower dementia risk. Researchers evaluated the inflammatory potential of these diets in relation to mild cognitive impairment/dementia risk using the DII during an average follow up of 9.7 years during Women's Health Initiative Memory Study.
- Higher inflammatory scores were significantly associated with greater cognitive decline and earlier onset of cognitive impairment.

Mediterranean Dietary Pattern

- 13 meta-analyses of observational studies and 16 meta-analyses of randomized controlled trials investigating association between adherence to Mediterranean diet and 37 different health outcomes, for a total population of over 12,800,000 subjects, were reviewed.
- Robust evidence (P-value<0.001) and large simple sizes show that greater adherence to the Mediterranean diet is associated with reduced risk of overall mortality, cardiovascular disease, heart attack, overall cancer incidence, diabetes, neuro-degenerative diseases and lower inflammatory markers.


This equals 32 pounds of sugar per year simply from soda
Sugars

- Americans consume primarily: table sugar and high-fructose corn syrup.
- Table sugar (sucrose): bond between one glucose and one fructose molecule.
- High fructose corn syrup: 55% fructose, 42% glucose and 3% other sugars.
- Every cell in our body readily converts glucose into energy.
- Liver cells are one of few types of cells that can convert fructose to energy.
- Soda floods liver with large amounts of free floating fructose versus the fiber in an apple slows down digestion, making the fructose slowly enter the liver.
- Large amounts of “free” fructose taxes the liver and increases fatty liver disease.
- Fructose raises levels of the hormone ghrelin, which stimulates hunger, and suppresses leptin, the hormone that makes you feel full.

Glycemic Index/Load

- Glycemic load measurement of impact of carbohydrates on blood sugar/insulin.
- International consensus conference concluded that given the consistency of the scientific evidence, diets low in glycemic index/load should be promoted in the prevention and management of diabetes and coronary heart disease, and are particularly important in individuals with insulin resistance.


Diabetes Matters to Us All

- “There is strong evidence that people with periodontitis have elevated risk for dysglycemia and insulin resistance.”
- Periodontitis is also associated with an increased risk of type 2 diabetes.”
- “The European Federation of Periodontology and the International Diabetes Federation report consensus guidelines for physicians, oral healthcare professionals and patients to improve early diagnosis, prevention and co-management of diabetes and periodontitis.”

Glycemic Load and Mood

- 82 healthy weight and healthy overweight or obese, adults enrolled in randomized, crossover controlled feeding study.
- Compared to a low GL diet, consumption of high GL diet resulted in:
  - 38% higher score for depressive symptoms (P = 0.002)
  - 55% higher score for total mood disorder (P = 0.05)
  - 26% higher score for fatigue/inertia (P = 0.04), compared to low GL diet.

**Glycemic Index & Glycemic Load Rating Chart**

**Glycemic Index (GI)**
- Low (<55)
- Moderate (56-69)
- High (>=70)

**Glycemic Load (GL)**
- Low (<10)
- Moderate (11-19)
- High (>=20)

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**Which One Would You Choose?**

**Banana**
- Glycemic Index = 52
- Available Carbs = 24 grams
- Glycemic Load = 14

**Watermelon**
- Glycemic Index = 72
- Available Carbs = 10 grams
- Glycemic Load = 8

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**Glycemic Load**

**Individual Food Portion**
- Low 0-10
- Moderate 11-19
- High 20+

**Whole Day**
- Low < 80
- Moderate 80-120
- High >120

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**Food**

<table>
<thead>
<tr>
<th>Food</th>
<th>Serving Size</th>
<th>Glycemic Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grapefruit</td>
<td>½ large</td>
<td>3</td>
</tr>
<tr>
<td>Apple</td>
<td>1 medium</td>
<td>6</td>
</tr>
<tr>
<td>Banana</td>
<td>1 large</td>
<td>14</td>
</tr>
<tr>
<td>Raisins</td>
<td>1 small box</td>
<td>20</td>
</tr>
<tr>
<td>Watermelon</td>
<td>1 cup</td>
<td>8</td>
</tr>
<tr>
<td>Carrots</td>
<td>1 large</td>
<td>5</td>
</tr>
<tr>
<td>Orange</td>
<td>1 medium</td>
<td>6</td>
</tr>
<tr>
<td>Sweet potato</td>
<td>1 cup</td>
<td>17</td>
</tr>
<tr>
<td>Baked potato</td>
<td>1 medium</td>
<td>28</td>
</tr>
<tr>
<td>French fries</td>
<td>1 medium serving</td>
<td>26</td>
</tr>
<tr>
<td>Snickers</td>
<td>1 bar</td>
<td>35</td>
</tr>
<tr>
<td>Reese's cup</td>
<td>1 miniature</td>
<td>2</td>
</tr>
<tr>
<td>White table wine</td>
<td>5 ounces</td>
<td>1</td>
</tr>
<tr>
<td>Red table wine</td>
<td>5 ounces</td>
<td>1</td>
</tr>
<tr>
<td>Grape juice</td>
<td>6 ounces</td>
<td>12</td>
</tr>
</tbody>
</table>

**Food**

<table>
<thead>
<tr>
<th>Food</th>
<th>Serving Size</th>
<th>Glycemic Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asparagus</td>
<td>½ cup</td>
<td>2</td>
</tr>
<tr>
<td>Broccoli</td>
<td>1 cup</td>
<td>4</td>
</tr>
<tr>
<td>Green beans</td>
<td>1 cup</td>
<td>3</td>
</tr>
<tr>
<td>Tomato</td>
<td>1 medium</td>
<td>2</td>
</tr>
<tr>
<td>Subway sandwich</td>
<td>Turkey breast</td>
<td>17</td>
</tr>
<tr>
<td>Butter pecan ice cream</td>
<td>5.5 ounces (small)</td>
<td>22</td>
</tr>
<tr>
<td>Vanilla ice cream cone</td>
<td>4.5 ounces (small)</td>
<td>19</td>
</tr>
<tr>
<td>Potato chips, fat free</td>
<td>1 bag (8 ounces)</td>
<td>49</td>
</tr>
<tr>
<td>Tortilla chips, white corn</td>
<td>3.5 ounces</td>
<td>38</td>
</tr>
<tr>
<td>Spaghetti</td>
<td>1 cup</td>
<td>38</td>
</tr>
<tr>
<td>Brown rice</td>
<td>1 cup</td>
<td>23</td>
</tr>
<tr>
<td>White rice</td>
<td>1 cup</td>
<td>33</td>
</tr>
<tr>
<td>Macaroni and cheese</td>
<td>1 cup prepared</td>
<td>31</td>
</tr>
</tbody>
</table>

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Low/High GI Meals

GI = 80   GL = 32
GI = 61   GL = 12

Tips on Whole Grains

• 100% Whole Wheat (first ingredient!)
• Oats (skip the instant)
• Brown Rice (white has bran/germ removed, LOW in nutrients)
• Whole Rye (four times the fiber of whole wheat, most nutritious)
• Whole Grain Barley (not pearled; bran and germ have been removed)
• Buckwheat (loaded in magnesium, gluten-free)
• Quinoa (not a grain, it’s a seed loaded in protein and omega 3)
• Whole Wheat Couscous (delicious and high in fiber)
• Corn (organic, non-GMO – increases healthy gut flora)
Gluten

- Autoimmune condition **celiac disease**, where immune system interacts negatively with gluten, a storage protein in cereal grains. ONLY treatment is complete avoidance of gluten. Note: In children, celiac disease is associated with both enamel defects and aphthous stomatitis.*
  - Celiac symptom checklist: [celiac.org/celiac-disease/resources/checklist/](celiac.org/celiac-disease/resources/checklist/)
  - Other individuals may be **allergic to wheat**, not all grains. Symptoms can include GI (indigestion, cramps, diarrhea, nausea), respiratory (stuffy/runny nose) and/or skin (hives or rash). Necessary to AVOID wheat.
  - And still others appear to have a **gluten sensitivity**, where "symptoms" improve when they eliminate gluten from their diet. This is less clear…


**Non Celiac Gluten Sensitivity**

- Multicenter study of 1,114 **children** (negative for celiac and wheat allergy) with chronic functional GI symptoms associated with gluten ingestion using a double-blind placebo controlled gluten challenge and crossover.
- Patients were randomized to gluten (10 g/daily) and placebo (rice starch) for 2 weeks each, separated by a washout week. Out of 1,114 children, 96.7% did not exhibit any correlation with gluten ingestion.
- Eleven of 36 children who did react tested posted for gluten challenge.

Eating alone will not keep a man well. He must also take exercise.

Hippocrates

- Higher risk for heart disease, type 2 diabetes, certain cancers, Alzheimer's disease and increase lower back pain, depression and anxiety.
- Half of baby boomers in the US report having NO exercise.
- 80 million Americans over the age of 6 years of age are entirely inactive.

Cardiorespiratory Endurance

- **Frequency**: at least 3 days per week
- **Intensity**: 60% of your max heart rate
  - $220 - your age = maximum beats per minute
  - Maximum heart rate x 0.6
  - $220 - 50 = 170 x 0.6 = 102$ bpm
- **Time**: minimum of 30 minutes
- **Type**: any exercise that keeps your heart rate up continuously.

FITT Prescription

- **Frequency** – how often you exercise
- **Intensity** – how hard you exercise
- **Time** – how long you spend exercising
- **Type** – what kind of exercise

Muscle Strength and Endurance

- **Frequency**: 2-3 days per week
- **Intensity**: 3 sets of 8 repetitions (these should be hard, if going for endurance do the repetitions until you can’t)
- **Time**: no time requirement for strength training
- **Type**: mix it up – those that use weight, resistance, jumping all develop muscular strength. Can use machines or pushups, abdominal curls, planks, etc.
Flexibility

• **Frequency:** at least 3 days per week should stretch all major muscles
• **Intensity:** should feel slight muscular discomfort but NOT pain
• **Time:** hold each static stretch for 5-10 seconds, do a couple repetitions, dynamic stretching for 5-10 minutes
• **Type:** static or dynamic (side shuffle, walking knee to chest, etc.).

Motivation

• Use a fitness tracker – assess your baseline (normal activity 3 days) and see where you can improve.
• Use an app, join a class, grab a friend
• Make it a habit. Just do it.
• Do something you enjoy
• Focus on the immediate benefits you will feel once you start exercising regularly

Pain

• Affects at >100 million Americans, more than those with heart disease, cancer, and diabetes combined.
• Pain costs US >$500 billion annually in medical treatment and lost productivity.
• US accounts for ~100% of hydrocodone (e.g., Vicodin) and 81% for oxycodone (e.g., Percocet) used globally.
• In 2012, over 5% of U.S. population 12 yrs or older used opioid pain relievers non-medically


“Drug Deaths in America Are Rising Faster Than Ever”
Josh Katz, NY Times
June 5, 2017

Drug overdose deaths, 1999 to 2014

Chronic Low Back Pain Guidelines

• For patients with chronic low back pain, clinicians and patients should initially select non-pharmacologic treatment with exercise, multidisciplinary rehabilitation, acupuncture, mindfulness-based stress reduction, tai chi, yoga, progressive relaxation, cognitive behavioral therapy, spinal manipulation…

(Grade: strong recommendation)

Acupuncture for Migraine

• Cochrane review 22 trials (n=4985) concluded that adding acupuncture to symptomatic treatment of attacks reduces the frequency of headaches AND that acupuncture may be as effective as treatment with prophylactic drugs.

• “Acupuncture can be considered a treatment option for patients willing to undergo this treatment.”

Magnesium for Migraines

• Studies show migraineurs have low brain Mg during migraine and low systemic mag.

• Reduces pediatric migraine and tension headaches.

• Canadian Headache Society: strong recommendation for prophylaxis with 600 mg magnesium citrate.

• Diarrhea most common side effect (mag oxide > citrate>glycinate). Caution in poor kidney function.

Mindfulness Meditation

• Long-time meditators have greater activation of areas responsible for sustaining attention, processing empathy, integrating emotion and cognition, and perceiving the mental and emotional state of others.

• Review of 47 trials found meditation improves:
  - Anxiety
  - Depression
  - Pain
Meditation Resources

• Guided Mindfulness Meditation: A Complete Guided Mindfulness Meditation Program from Jon Kabat-Zinn
• Insight Timer - ~4,000 guided meditations from more than 1,000 teachers (self-compassion, nature, stress, podcasts and more). More than 750 meditation music tracks. Free.
• Headspace – very good for beginners with 10 minute meditations. Free.
• The Mindfulness App – nice 5 days guided mediation program to get you started. Can be personalized and integrated into other health apps. Free.
• Aura – multiple teachers, from 3-10 minute daily meditations. Customizable. #1 new app on Apple in 2017. $29 for 6 months.