Healthy Eating to Prevent, Treat and Reverse Chronic Disease

What Should We Be Telling Our Patients?

Michael D Parkinson, MD, MPH, FACPM
Sr Medical Director, Health and Productivity
“Give it to me straight, Doc. How long do I have to ignore your advice?”
“McLipitor Syndrome”*

"I call it the McLipitor Syndrome. Patients feel they can eat whatever they want as long as they take a statin drug to lower cholesterol...

Because of time constraints, physicians may spend little time counseling lifestyle change, which can work as well as or better than the best drugs for heart disease, obesity, diabetes and high blood pressure."

*Mark Goldstein, MD, NY Times Magazine Letter to Editor Feb 11, 2007
MD Barriers: Time, Resources, My Knowledge/Skills, Patient Interest and Belief Counseling Works*

Indicate how important the following factors are in determining whether you discuss healthy lifestyle changes with patients. Healthy lifestyle changes include quitting smoking, losing weight, changing eating habits, managing stress, or increasing physical activity. (n=19; Respondents = Physicians, Residents, Physicians Assistants, CRNPs)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time available to spend with patient</td>
<td>9.16</td>
</tr>
<tr>
<td>Availability of resources or programs to offer assistance to patients</td>
<td>8.16</td>
</tr>
<tr>
<td>My knowledge and skills about the topic</td>
<td>7.74</td>
</tr>
<tr>
<td>Patient interest in discussing the topic</td>
<td>7.53</td>
</tr>
<tr>
<td>Belief that it will influence the patient’s behavior</td>
<td>7.53</td>
</tr>
<tr>
<td>How well it fits into my daily routine</td>
<td>6.06</td>
</tr>
<tr>
<td>Reimbursement/payment opportunity</td>
<td>3.47</td>
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</tbody>
</table>

*from UPMC Rx Wellness Case Study manuscript AJMQ review
<table>
<thead>
<tr>
<th>Disease</th>
<th>Reduction Compared to U.S.</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Disease</td>
<td>64%*–83%**</td>
<td>80% due to modifiable risk factors</td>
</tr>
<tr>
<td>Cancer</td>
<td>60%*</td>
<td>Approximates NCI estimates</td>
</tr>
<tr>
<td>Diabetes</td>
<td>91%**</td>
<td>No type 2 epidemic</td>
</tr>
<tr>
<td>All-cause Mortality</td>
<td>50%*</td>
<td>25-year Okinawa program — similar findings</td>
</tr>
</tbody>
</table>

*Knoops et al and **Rimm, Stampfer, JAMA 2004;292:1433-1439*
How Many Americans Can Say Yes?

I am within 5 pounds of my ideal body weight

I exercise 30 minutes or more most days of week

I eat a healthy diet with 5 fruits/vegetables most days

I don’t use tobacco products

I have 2 or fewer alcoholic drinks per day
Comparison of US and Okinawa Diet
Meat and Dairy vs Fruits, Vegetables, Grains*

- 7 servings of vegetables and fruits
- 7 servings of grains
- 2 servings of soy products
- Omega 3 fish several times per week
- Minimal dairy and meat

Okinawan Food Pyramid* in Detail

- **Daily**
  - Sweets: 0-3 servings
  - Meat, poultry, eggs: 0-7 servings
  - Vegetable Oils and Condiments Sparingly: 1-2 tablespoons
  - Omega 3 Foods: 1-3 servings
  - Fruit: 2-4 servings
  - Flavonoid Foods: 2-4 servings
  - Calcium Foods: 2-4 servings
  - Rice, noodles, breads, whole grains: 7-13 servings
  - Vegetables: 7-13 servings

- **Optional Weekly**

(*The Okinawa Program; Willcox, Willcox, Suzuki; 2001; p 75)
US Per Capita Meat Consumption Continues to Increase (2016 >200 lbs per person per year)
SAD (Standard American Diet)  
Processed & Animal-based Food Epidemic Recent Decades

• Added salt
  – US adults 3528 mg/day
  – US children 2999 mg/day

• Added sugar
  – US adult sugary drink 74 oz/week
  – US children sugary drink 85 oz/week

• Added fat
  – US 32 lbs cheese per person (8 lbs 1960) per year
  – US 220 lbs meat per person (50% beef/pork, 50% chicken) per year

• No/minimal fiber, potassium, micronutrients, antioxidants
  – 7-8 gm/day vs optimal 40 gm/day or more

UPMC HEALTH PLAN
## Body Mass Index and Disease Risk

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI (kg/m²)</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
<td>Increased</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5-24.9</td>
<td>Normal</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0-29.9</td>
<td>Increased</td>
</tr>
<tr>
<td>Obese I</td>
<td>30.0-34.9</td>
<td>High</td>
</tr>
<tr>
<td>Obese II</td>
<td>35.0-39.9</td>
<td>Very High</td>
</tr>
<tr>
<td>Obese III</td>
<td>&gt;40</td>
<td>Extremely high</td>
</tr>
</tbody>
</table>

**Additional risks:**
- Large waist circumference (men >40 in; women >35 in)
- 5 kg or more weight gain since age 18-20 years
- Poor aerobic fitness
- Specific races and ethnic groups

Steps in the Pathogenesis of Inflammation Progressing to Chronic Diseases*

- Microbiome dysbiosis
- Oxidative stress
- Cell injury
- Chronic Inflammation

- Unhealthy Diet
- Sedentary Lifestyle
- High Stress
- Medications

- Obesity
- Type 2 DM
- CVD
- Cancer
- Depression

CA Risk Rises with Meat Consumption

**Meat Consumption And Cancer Incidence For Selected Countries (Adjusted For Income)**

![Diagram showing the relationship between meat consumption and cancer incidence for selected countries, adjusted for income.](image-url)
Decades-Long Tobacco Reduction and CVD Treatment Progress Overcome By Lifestyle in Last 5 Years

35+ Age-adjusted 5 State Region and US CVD Death Rates (per 100,000) 2010-2016

PA, OH, WV, KY, DE

US

Goal

2010 2013 2016
Effect of Replacing Animal Proteins with Plant Proteins on All-cause, CVD, CA and Other Mortality*

<table>
<thead>
<tr>
<th>Animal Protein Source by Cause of Death</th>
<th>HR (95% CI)</th>
<th>Favors Plant Protein</th>
<th>Favors Alternate Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cause</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processed red meat</td>
<td>0.66 (0.59-0.75)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unprocessed red meat</td>
<td>0.88 (0.84-0.92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>0.94 (0.90-0.99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>0.94 (0.89-0.99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg</td>
<td>0.81 (0.75-0.88)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy</td>
<td>0.92 (0.87-0.96)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processed red meat</td>
<td>0.61 (0.48-0.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unprocessed red meat</td>
<td>0.83 (0.76-0.91)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>0.91 (0.83-1.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>0.88 (0.80-0.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg</td>
<td>0.88 (0.75-1.04)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy</td>
<td>0.89 (0.80-0.98)</td>
<td></td>
<td></td>
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<tr>
<td>Cancer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processed red meat</td>
<td>0.86 (0.71-1.04)</td>
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<td></td>
</tr>
<tr>
<td>Unprocessed red meat</td>
<td>0.96 (0.89-1.03)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry</td>
<td>0.99 (0.91-1.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>0.98 (0.91-1.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg</td>
<td>0.83 (0.73-0.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairy</td>
<td>1.00 (0.93-1.09)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processed red meat</td>
<td>0.55 (0.46-0.67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unprocessed red meat</td>
<td>0.84 (0.78-0.90)</td>
<td></td>
<td></td>
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<tr>
<td>Poultry</td>
<td>0.93 (0.86-1.00)</td>
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</tr>
</tbody>
</table>

Pooled meta-analysis of 5M person-years prospective Nurses and Health Professional Cohort studies*
- Significant reduction incident coronary heart disease (HR = .75) for healthy plant-based vs unhealthy (processed/refined) plant & animal-based foods (HR = 1.32)

“This study adds to the evidence of gradations of adherence to an overall (healthy plant-based eating) with CHD incidence, such that one could propose a risk-based approach to (healthy plant-based eating) prescription: secondary prevention after cardiovascular events and patients at high risk having a stronger recommendation for a strictly (doing so).” (Drs Williams, President ACC and Patel)

*J Am Coll Cardiol 2017;70:411-422
Root Cause Lifestyle Medicine Approach to Undoing Chronic Disease Epidemic: “Eat, Move, Think”

Mindfulness, purpose, stress reduction

Whole-food, plant-based eating

Physical Activity
<table>
<thead>
<tr>
<th>Food Group</th>
<th>Servings/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains (mostly whole)</td>
<td>7 to 8</td>
</tr>
<tr>
<td>Vegetables</td>
<td>4 to 5</td>
</tr>
<tr>
<td>Fruits</td>
<td>4 to 5</td>
</tr>
<tr>
<td>Low/non-fat dairy</td>
<td>2 to 3</td>
</tr>
<tr>
<td>Meats, poultry, fish</td>
<td>2 or fewer</td>
</tr>
<tr>
<td>Nuts, seeds, legumes</td>
<td>1</td>
</tr>
<tr>
<td>(Sodium)</td>
<td>&lt; 1500 mg</td>
</tr>
</tbody>
</table>

DASH Dietary Pattern (Dietary Approach to Stop HTN RCT 2001)
Weight Loss (5-10%) Impact on Common Diseases

- Moderate amounts of weight loss result in clinically meaningful effects on multiple diseases
- 2-6 kg loss (5-10% body wt) + diet and increased activity
  - 20% reduction in new high blood pressure cases
  - 53% reduction in existing high blood pressure cases
  - 47% reduction high LDL (bad) cholesterol
  - 58% reduction in new cases of diabetes
What Then is the Best Diet?

- High Nutritional Value
- Low in Empty Calories
- High in Fiber
- High in Antioxidants
- High in Micronutrients (flavonoids, vitamins)
- Low Calorie Density
- Low/No Cholesterol
- Low in Saturated Fats

Whole Food Plant-based Eating Pattern
### Daily Dietary Recommendations*

**Lifestyle Medicine: Impact on Health and Survival**

**Decrease substantially or eliminate**

**Inflammatory effects**

**Low nutrient/high calorie**

- Meat: beef, pork, lamb, chicken, turkey, seafood
- Processed meats: salami, bologna, ham, turkey, chicken
- Animal dairy: milk, cheese, yogurt, kefir, sour cream, cottage cheese, butter
- Sugar substitutes and refined sugars: aspartame, high-fructose corn syrup
- Processed foods: refined grains (white bread, cookies, fried potato chips)
- Soft drinks, alcohol

**Increase or consume heavily**

**Anti-inflammatory effects**

**High nutrient/low calorie**

- Leafy greens
- Vegetables, cruciferous, squash, garlic
- Mushrooms
- Fruits: berries, bananas, pomegranates
- Legumes: green beans, lentils, soybeans, sugar snap peas
- Whole grains: quinoa, wheat, oat, rice, pasta, barley, corn
- Seeds: flax, chia, pumpkin, sesame
- Plant-based “dairy”: soy, almond, rice milk
- High nutrient/high fat: limited consumption
  - Nuts: walnuts, pecans, almonds

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Kaiser: Plant-based Diet Recommended All Patients

THE PLANT-BASED DIET:

a healthier way to eat
Presented by Kaiser Permanente

“Eat food. Not too much. Mostly plants.”
— Michael Pollan

Start with a simple assessment:

1. Are you open to changing your diet if it could really improve your health?

2. Do you want to lose weight?

3. Do you want to feel better?

4. Do you want to improve, stabilize, or even reverse a chronic condition such as heart disease, high cholesterol, diabetes, or high blood pressure?

If you answered “yes” to any of these questions, then a plant-based eating plan may be for you. This booklet includes information to help you follow a low-fat, whole-foods, plant-based diet.

1 In Defense of Food: An Eater’s Manifesto (New York: Penguin, 2009)
“Eat food, not too much, mostly plants”
Fruits, vegetables, whole grains can’t be reduced to pills
Beware reductionist nutritionism & “approved” diets
Chronic disease is reversible . . with food as medicine!
Foundational to emerging field of “lifestyle medicine” is whole-food, plant based eating pattern
- ACPM/ACLM 30 hour CME/CEU Credit Curriculum released 10/16
Alignment and synergy of “green” with “health”
- Local foods, richer soils, lower carbon footprint
- Just beginning and transformational
Choose to Eat Right

• Reasonable portions
  – Palm not forearm
• 5 – 10 (or more) servings of colorful fruits and vegetables, whole grains daily
• Fish twice per week
• Monounsaturated and polyunsaturated oils
  – Olive or soybean
• Plant fiber and protein
• Meat, dairy as “condiments” if at all
Nutritional Basics I

Calories, Weight, and Calorie Content
• Calorie = unit of energy to burn or store
• One pound = 3,500 calories
  – On average, put on at least 1 pound year
  – Do you weigh what you did when you were 18?
• Calorie content
  – Carbohydrate: 4 calories/gram
  – Protein: 4 calories/gram
  – Fat: 9 calories/gram
Nutritional Basics II: A “Serving”

- Fruits/vegetables/grains: ½ to 1 cup
  - Fits in palm, size of fist or softball
- Meat/fish: 3 ounces = deck of cards
- Fluids: 1 cup = 8 ounces
  - Soda can = 12 ounces
- Plate sizes and portions
  - Try to find your mom’s 9” dinner plate!
  - Rule of fourths: ¾ of plate at least with vegetables/fruit/whole grains
Nutritional Basics III: Daily Needs

• On average 2,000 calories per day
  – Men up to 2,200
  – Women 1,800 to 2,000
  – +/- based on activity, desire to gain or lose weight
• Healthy meal: 600-700 calories assuming 3 meals/day
• Sodium – less than a teaspoon (2,400 mg)/day
• Micronutrients, vitamins – think food not pills
• On average, Americans eating 300 more calories per day in 2006 than 1960
  – 1960: 13% greater than 30 pounds above ideal weight
  – 2004: 33% greater than 30 pounds above ideal weight
Dr Mark Fuhrman’s GOMBBS: Disease Proofing with Diet Using the Most Nutrient-Dense, Health-Promoting Foods

- **Greens**: unlimited quantities, most nutrient-dense of all foods but we eat none – iceberg lettuce!!; rich in folate, ca, and antioxidants, phytochemicals
- **Onions**: Detoxify carcinogens, lowers risk of CA’s
- **Mushrooms**: lower CA risk and block estrogen production
- **Berries**: low in sugar high in nutrients and fiber, high in potassium reducing blood pressure
- **Beans**: High fiber, anti-diabetes, slow-digesting, reduces calories absorbed, fermented by bacteria into fatty acids preventing colon CA
- **Seeds/Nuts**: healthy fats, cardiovascular prevention and Omega-3, flaxseed/sesame seeds anti-inflammatory and anti-CA effects
Other Nutritional Take Homes

- **Protein** – excessive intact all sources available from plants
- **Fiber**: “Soluble” and “insoluble” more of both > 40 gm/day
- **Sodium/Potassium balance**: less/more
  - Sodium raises, potassium lowers blood pressure
  - Salt added unnecessarily to processed foods, particularly in US
  - Potassium high in fruits naturally lowers BP
- **Calcium**
  - Low fat dairy but also fruits/vegetables (broccoli, beans, soybeans)
- **Cholesterol**
  - Body doesn’t need to consume any as it produces it
  - “High cholesterol” as much a function of saturated and trans fat intake
  - Framingham and older cultures – no cardiac disease <150 mg/dl
- **“High fructose corn syrup”**
  - Cheap sweetener making food “calorie dense”
  - Added less frequently (like salt) to non-US products
Common Questions

- **Multivitamins and supplements?**
  - Food sources preferable
  - Daily multivitamin ok but recent review says “not needed”
  - Pregnancy or child-bearing age: folic acid
  - Calcium & Vitamin D, B vitamins, Echinacea, glucosamine/chondroitin, saw palmetto and others - nope
  - Regulation, safety and consistency concerns
  - B12 if totally plant-based but deficiency rarely seen

- **Fish oils?**
  - Omega 3’s in natural sources preferred to capsules

- **Alcohol?**
  - Don’t start but if you do, 1-2 drinks per day OK

- **Gluten?**
  - 1-2% celiac disease others likely overstate need and clinical benefit
  - Beware “gluten free” foods . . Removal of key nutritional elements may be less healthy

- **Baby aspirin? – Discuss with your doctor**
  - Men over 50 or 40+ with cardiac risk factors (hypertension, diabetes, smoking)
  - Postmenopausal women
Psychosocial Predictors Of 5 Fruits and Vegetables Daily

• Review of 35 studies of psychosocial factors and fruit and vegetable intake*
• Only 3 factors shown to consistently predict healthy consumption
  – Knowledge and skills
    • I know its ‘good’ and know ‘what to do’”
  – Self-efficacy
    • “I believe or know I can change”
  – Social and environmental support
    • “Someone cares, is watching and provides reinforcement for my behavior”

Medical Specialty Societies Define Lifestyle Medicine Competencies

Lifestyle Medicine - evidence-based practice of helping individuals and families adopt and sustain healthy behaviors that affect health and quality of life

*American Academy of Family Physicians, American College of Physicians, American Academy of Pediatrics, American College of Sports Medicine, American College of Lifestyle Medicine, American Osteopathic Association, American Medical Association, American College Preventive Medicine
Prescription for Wellness: Prescribing Coaching
Evidence-Based Support for Condition Management, Shared Decision Making and Lifestyle Improvement

Online program to address issues such as stress, tension, anxiety and depression.
Effective evidence-based treatment using Cognitive Behavioral Therapy.

Shared Decision making Support
Back, Hip, Knee and Shoulder Pain
Bariatric Treatment
Breast or Prostate Cancer
Heart Disease
Crohn’s Disease
Uterine Fibroids
Benign Prostatic Hyperplasia

Condition Management

<table>
<thead>
<tr>
<th>ADHD</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Cardiac conditions</td>
</tr>
<tr>
<td>Asthma</td>
<td>Low Back Pain</td>
</tr>
<tr>
<td>COPD</td>
<td>Maternity</td>
</tr>
<tr>
<td>CKD</td>
<td>Substance Use</td>
</tr>
<tr>
<td>Depression</td>
<td></td>
</tr>
</tbody>
</table>

Lifestyle Improvement
Nutrition
Tobacco Cessation
Weight Management
Physical Activity
Stress Management

UPMC Health Plan
Intensive Lifestyle Disease Reversal Programs Demonstrated Impact

<table>
<thead>
<tr>
<th>Major Acute Events</th>
<th>Demonstrated Reduction in IL/DR studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial Infarctions</td>
<td>✓</td>
</tr>
<tr>
<td>Strokes</td>
<td>✓</td>
</tr>
<tr>
<td>Stents</td>
<td>✓</td>
</tr>
<tr>
<td>Bypass Surgeries</td>
<td>✓</td>
</tr>
<tr>
<td>Ablation Surgeries</td>
<td>✓</td>
</tr>
<tr>
<td>Joint Replacement</td>
<td>✓</td>
</tr>
<tr>
<td>Osteoarthritis</td>
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</tr>
<tr>
<td>Dialysis</td>
<td>✓</td>
</tr>
<tr>
<td>Transplants</td>
<td>✓</td>
</tr>
<tr>
<td>Amputations</td>
<td>✓</td>
</tr>
</tbody>
</table>

IL/DR studies have shown a 25-90% reduction in major recurrent CVD and other clinical and costly acute care events
Epigenetics: New Basic Science
Rapid Expression of Health Endpoints Thru Lifestyle

Epigenetic Mechanisms are affected by these factors and processes:
- Development (in utero, childhood)
- Environmental chemicals
- Drugs/Pharmaceuticals
- Aging
- Diet

Health Endpoints:
- Cancer
- Autoimmune disease
- Mental disorders
- Diabetes

DNA methylation:
Methyl group (an epigenetic factor found in some dietary sources) can tag DNA and activate or repress genes.

Histone modification:
The binding of epigenetic factors to histone “tails” alters the extent to which DNA is wrapped around histones and the availability of genes in the DNA to be activated.

Histones are proteins around which DNA can wind for compaction and gene regulation.
Recommended Approach

• Assume “undernourished”, inflammatory-inducing eating
• Make the link: “what I eat”, “how I move”, “what I ‘think’” are root cause to of patient risk, condition or disease
• Brief motivational message – we have to address together and I believe we can do so step by step over time
• Core message
  – Whole foods, plant-based as much as possible with fiber, fruits, vegetables and whole grains
  – Minimize or eliminate highly processed foods, dairy, meats, excessive oils or use sparingly as “condiments” to plant-based meals
  – More you move to plant-based, quicker the results (labs, weight, DM)
• *Prescribe* coaching or intensive lifestyle disease reveral program and create expectation of followup at next visit
• Walk the talk: why should I do it if my doc doesn’t?
I Can’t Help It . . 
It “Runs In My Family”

It's not that diabetes, heart disease and obesity runs in your family. It's that no one runs in your family.
• Journal of Geriatric Cardiology Oct 2017 Special Issue (14:5), Ostfeld, Esselstyn, Williams et al.
• How Not to Die. Michael Greger, MD (NY Times Bestseller) 2015.
• The Okinawa Program: Learn the Secrets to Healthy Longevity. Willcox, Willcox and Suzuki, Three Rivers Press, 2001
• Everyday Cooking with Dr Dean Ornish. Ornish Harper Collins 1997.
• What Healthy People Know … And the 7 Things They Do to Stay Healthy and Live Long’” by Dr. Bob Gleeson, MD (Health Now LLC and Classic Day Publishing)