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
10 y/o African American male with history of obesity, asthma, bipolar disorder, and ADHD presenting for well child check. Has had intermittent chest pain but otherwise no acute complaints. Mother accompanies him and is concerned about his diet.

**Dietary History**
- 3 meals per day, typically in front of TV
- Fast food 2x / week
- Drinks Mountain Dew or lemonade, occ. water

**Past Medical History**
Born FT, breastfed for one month
Asthma: multiple ED visits and admissions, no ICU stays
ADHD, Bipolar disorder

**Medications**
Albuterol PRN, Vyvanse, Abilify

**Family History**
- Mother is overweight, has type II diabetes, hypertension
- Father is overweight, has hypertension
- Maternal grandfather died of MI
- Paternal grandfather was victim of homicide

**Social History**
- Resides in Hill district with parents
- Is in 5th grade- frequently bullied
- Father smokes in the home

**Physical Examination**
Wt 65 kg, Ht 140.7cm, BMI 32 = 99%tile
T 37.6, HR 100, R 20, BP 135/70, O2 sat 98% on RA
Gen: NAD
HEENT: PERRLA, EOMI, oropharynx unremarkable
CV: RRR, normal S1 and S2
RESP: CTAB, no wheezes, normal work of breathing
ABD: Obese, soft, NT, ND. Liver edge palpable 1-2 cm below costal margin.
MSK: No swelling or deformity.
Derm: Acanthosis nigricans noted in posterior neck folds and axillae
Neuro: Normal mental status, no focal deficits

**Laboratory Testing**
Random blood glucose: 107 mg/dL
Total cholesterol: 210 mg/dL
LDL: 162 mg/dL
HDL: 28 mg/dL
"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>
</tr>
</tbody>
</table>

*from UPMC Rx Wellness Case Study manuscript AJMQ review
Mediterranean (or Asian) Diet + Nonsmoker + Daily Activity + Moderate Alcohol Use*

<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>

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

UPMC HEALTH PLAN
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

*The Okinawa Program: Learn the Secrets to Healthy Longevity, Three Rivers Press, 2001
Okinawan Food Pyramid* in Detail

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

- **Optional Weekly**
  - Sweets: 0-3 servings
  - Meat, poultry, eggs: 0-7 servings

(*The Okinawa Program; Willcox, Willcox, Suzuki; 2001; p 75)
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
US Per Capita Meat Consumption Continues to Increase (2016 >200 lbs per person per year)
Steps in the Pathogenesis of Inflammation Progressing to Chronic Diseases*

Microbiome dysbiosis

Oxidative stress

Cell injury

Chronic Inflammation

Obesity
Type 2 DM
CVD
Cancer
Depression

Unhealthy Diet
Sedentary Lifestyle
High Stress
Medications

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>
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<tr>
<td>Unprocessed red meat</td>
<td>0.83 (0.76-0.91)</td>
<td></td>
<td></td>
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<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>
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<tr>
<td>Cancer</td>
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<td></td>
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<tr>
<td>Processed red meat</td>
<td>0.86 (0.71-1.04)</td>
<td></td>
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<tr>
<td>Unprocessed red meat</td>
<td>0.96 (0.89-1.03)</td>
<td></td>
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<tr>
<td>Poultry</td>
<td>0.99 (0.91-1.06)</td>
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<td></td>
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<tr>
<td>Fish</td>
<td>0.98 (0.91-1.06)</td>
<td></td>
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</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>
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<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>
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• 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”

Purpose, passion, connection, stress reduction, mindfulness

Whole-food, plant-based eating

Physical Activity
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.

1In Defense of Food: An Eater’s Manifesto (New York: Penguin, 2009)
Canada’s Dietary Guidelines for Health Professionals and Policy Makers

Canada.ca.FoodGuide
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”

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

**Lifestyle Improvement**
- Nutrition
- Tobacco Cessation
- Weight Management
- Physical Activity
- Stress Management

**Health Coaching**
Make the call for a healthier life!

See how these convenient telephone sessions can help you improve your health, reduce your health risks, and increase your enjoyment of life!
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*
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>
<td>✓</td>
</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**
- Development (in utero, childhood)
- Environmental chemicals
- Drugs/Pharmaceuticals
- Aging
- Diet

**CHROMOSOME**
- **METHYL GROUP**

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

**CHROMATIN**
- **HEALTH ENDPOINTS**
  - Cancer
  - Autoimmune disease
  - Mental disorders
  - Diabetes

**EPIGENETIC FACTOR**

**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.
“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
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 reversal 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.
Resources

- How Not to Die. Michael Greger, MD (NY Times Bestseller) 2015.
- 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)