The Mediterranean Diet
Reducing inflammation for a longer life

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The Mediterranean Diet is a way of eating based on the traditional foods (and drinks) of the countries surrounding the Mediterranean Sea.

The Mediterranean Diet is not a diet, as in “go on a diet,” even though it is a great way to lose weight or improve your health.

Rather, it is a lifestyle - including foods, activities, meals with friends and family, and wine in moderation with meals.

Mediterranean Diet
Mediterranean Diet

- It has been studied and noted by scores of leading scientists as **one of the healthiest diets in the world**.
- Just as important, the Mediterranean Diet is full of wonderfully delicious, flavor-filled dishes and meals.

Mediterranean Diet

- Research has shown that the traditional Mediterranean diet **reduces the risk of heart disease**.
- In fact, an analysis of more than 1.5 million healthy adults demonstrated that following a Mediterranean diet was associated with a **reduced risk of death from heart disease and cancer**, as well as a **reduced incidence of Parkinson's and Alzheimer's diseases**.
- The Dietary Guidelines for Americans recommends the Mediterranean diet as an eating plan that can help **promote health and prevent disease**.
Mediterranean Diet

- Scientists have intensely studied the eating patterns characteristic of the Mediterranean Diet for more than half a century.
- Shortly after World War II, researchers organized the remarkable *Seven Countries Study* to examine the hypothesis that Mediterranean-eating patterns contributed directly to improved health outcomes.
- This long-running study examined the health of almost 13,000 middle-aged people in the United States, Japan, Italy, Greece, the Netherlands, Finland, and then-Yugoslavia.

When the data were examined, it was clear that people who ate a diet where fruits and vegetables, grains, beans, and fish were the basis of daily meals were healthiest.

- Topping the chart were residents of Crete.
- Even after the deprivations of World War II - the cardiovascular health of Crete residents exceeded that of US residents.
- Researchers attributed the differences to diet.
Island of Crete

Mediterranean Diet

In subsequent years the body of scientific evidence supporting the healthfulness of the traditional Mediterranean Diet has continued to grow.

A Mediterranean diet - rich in vegetables, olive oil and fish - offers substantial protection against many conditions influenced by inflammation, including four major chronic illnesses: heart disease, Parkinson’s disease, Alzheimer’s disease and Cancer.
Mediterranean Diet has been shown to:

- Lengthen your life
- Improve Brain Function
- Defend you from chronic diseases
- Fight certain cancers
- Lower your risk for heart disease, high blood pressure and elevated "bad" cholesterol levels
- Protect you from diabetes
- Aid your weight loss and management efforts
- Keep away depression
- Ward off Parkinson’s & Alzheimer’s disease
- Improve rheumatoid arthritis
- Improve eye health
- Reduce risk of dental disease
- Help you breathe better
- Lead to improved fertility healthier babies

Mediterranean Diet

- www.oldways.org
- Mediterranean Diet and Health Information
- Cited research on each category on previous slide
Mediterranean Diet

- Throughout history, infections have posed the biggest challenge to human health.
- This challenge changed in the 19th and 20th centuries because of economic development and improvements initiated largely by the Industrial Revolution.
- Public health and hygiene improved; the advent of antibiotics and vaccinations reduced diseases, and, driving these, the recognition that a predominant cause of infections was microbial pathogens.
- It seemed that man’s battle against disease had been all but won.

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- Mid-20th-century optimism, however, was dampened by the reality of a transition that occurs with economic development.
- In this transition, chronic diseases and conditions (eg, heart disease, cancer, diabetes, chronic respiratory problems) — often called the “diseases of civilization” — replace infections as the major source of disease.
- Approximately 70% of diseases now result from chronic conditions.
**Mediterranean Diet**

- For more than 2,000 years, classical inflammation has been recognized by the symptoms identified by the Roman physician Aurelius Celsus as pain, redness, heat, and swelling.
- This form of classical inflammation is typically a short-term response to infection and injury.

**Mediterranean Diet**

- However, in 1993, researchers discovered a different type of prolonged, and maladaptive inflammatory response associated with obesity, which they suggested may explain the disease-causing effects of excessive weight gain.
- “Metaflammation,” as it was later called because of its link with the metabolic system, differs from classical inflammation in that it:
  - 1) is low-grade, causing only a small rise in immune system markers.
Mediterranean Diet

- 2) is persistent and results in chronic, rather than acute illness
- 3) has systemic rather than local effects
- 4) appears to perpetuate, rather than resolve disease
- 5) is associated with a reduced, rather than increased, metabolic rate.

In essence, although classical inflammation has a healing role in acute disease, metaflammation, because of its persistence, has a different role, helping to aggravate and perpetuate chronic disease.
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Inflammation: Underlying cause of chronic illness

- Cardiovascular disease
- Cancer
- Neurodegenerative disease
- Autoimmune disease
- Type 2 Diabetes
- Obesity
- Alzheimers
- Asthma
Inflammation of the Arteries

C-Reactive Protein

- CRP (C-Reactive Protein) Elevated CRP is associated with inflammation anywhere in the body - a systemic inflammatory marker (heart disease, arthritis, sinus infection, etc.)
  - High levels can be predictive of heart disease, especially if it is elevated along with Lp-PLA2
  - If BOTH CRP-hs and Lp-PLA2 levels are elevated, your risk for heart disease and stroke can be 2-4 times higher
  - Stress can cause CRP to go up
4 Stages of Disease

- Wellness
- Silent Chronic Inflammation (can go on for years)
- Disease
- Chronic Disease

Silent vs Classical Inflammation

- Classical inflammation hurts - red, irritated, inflamed
- Silent inflammation - chronic, low-level inflammation - no overt pain
- At cellular level
- Can linger for years, if not decades, until organ damage emerges
Indicators of Silent Inflammation

- Being overweight, obese
- Sleep deprivation
- Constantly fatigued
- Gut issues
- Metabolic Syndrome
- Carbohydrate craving
- Chronic headaches

What is Inflammation?

- Mediated by eicosanoids
  - Prostaglandins,
  - Leukotrienes,
  - Thromboxanes
- Eicosanoids are signaling molecules in the body that exert complex control over many bodily systems
- Inflammation is treated by drugs that alter eicosanoids: aspirin, NSAID’s, COX-2 inhibitors, Steroids
Eicosanoids

- The type of fat you eat has direct effect on what kind of inflammatory markers your body produces
- Fats are the building blocks of eicosanoids
- Eicosanoids mediate inflammation

Good Eicosanoids

- Act as vasodilator (open up blood vessels)
- Enhance immune system
- Decrease inflammation
- Decrease pain
- Increase oxygen flow
- Increase endurance
- Dilate airways
Bad Eicosanoids

- Act as vasoconstrictors (constrict blood vessels)
- Suppress immune system
- Increase inflammation
- Increase pain
- Decrease oxygen flow
- Decrease endurance
- Constrict airways (asthma)
- Increase cellular proliferation (cancer)

Eicosanoids

- In order to make more good eicosanoids and less bad eicosanoids to avoid disease, we need to eat the correct fats
- **Good fats**: Omega 3 fats, Monounsaturated fats
- **Bad fats**: Too much Omega 6 fats, Saturated fats, Trans fats
FAT IS GOOD!!

- Depending on what kind....
  - **Omega 3 fatty acids** (salmon, sardines, herring, fish oils)
  - Monounsaturated fats (EVOO, nuts and nut oils, avocado)

FAT IS BAD!

- Saturated/Trans:
  - *Too much beef and other animal fats*
- *Hydrogenated fats and oils*
- *Too much omega 6 fats*
Omega 6 and Omega 3

- Omega 6 and Omega 3 fatty acids should be consumed in a ratio of 2:1
  - Typical American diet is more like 20:1
- For every 2 grams of Omega 6 fats consumed, 1 gram of Omega 3 should be consumed

Sources of Omega 6

- Widespread in foods (processed)
  - Cheaper
  - Shelf stable
- Found mostly in:
  - Vegetable oils (Safflower, sesame, soy, corn and sunflower seed oils)
  - Salad dressings made with above oils
  - Margarines made with above oils
  - Any product with long shelf life (crackers, pastries, chips)
Reduce Omega 6

- Make your own salad dressing using EVOO (monounsaturated) or walnut oil (Omega 3)
- Use EVOO or nut oil with herbs on vegetables instead of margarine
- Use peanut or almond butter on toast instead of margarine

Increase Omega 3

- Eat more oily fish: salmon, trout, herring, sardines, tuna (no more than 2x/week)
- Eat 1-2 Tbsp ground flaxseed daily
- Eat small servings walnuts/pumpkin seeds
Studies on Fish Oil

- Eating fish as little as once a week reduces the risk of sudden death in men
- Eating fish twice a week reduces CHD risk in women
- Fish intake reduces Alzheimer’s risk

Fish Oil Supplement

- Fish
  - Contamination with PCB, dioxin, and Hg
- Omega-3 EPA/DHA Supplements
  - Removal of PCB’s and other toxins
  - Can be used in high doses
  - EPA + DHA = 1,000 mg - 4,000 mg per day
  - Healthy: 1,000 mg day
  - High Triglycerides: 2,000 - 4,000 mg day
  - High Blood Pressure: 2,000 mg day
  - High Cholesterol: 2,000 mg day
  - BiPolar disorder: > 10 g day in studies
Mediterranean Dietary Pattern

- An abundance of foods from plant sources - fruits, vegetables, potatoes, breads and whole grains, beans, nuts and seeds
- Emphasis on a variety of minimally processed, seasonally fresh and locally grown foods
- Olive oil as the principal fat, replacing other fats and oils
- Total fat ranging from less than 25% to more than 35% of total calories with saturated fat no more than 7%

Mediterranean Dietary Pattern

- Daily consumption of low to moderate amounts of cheese and yogurt
- Twice-weekly consumption of low to moderate amounts of fish and poultry
- Zero to 4 eggs per week
- Fresh fruit as typical daily dessert; sweets (usually made with honey) and saturated fat consumed no more than a few times per week
- Red meat consumed a few times per MONTH
Mediterranean Dietary Pattern

- Moderate consumption of wine, normally with meals, about 1-2 glasses per day for men and 1 glass per day for women
Anti-inflammatory food guide pyramid

- www.drweil.com
- Healthy sweets - sparingly: dried fruit, dark chocolate, fruit sorbet
- Red wine: optional no more than 1-2 glasses per day (1 for women, 2 for men)
- Tea: 2-4 glasses/day
- Healthy herbs and spices: unlimited

Anti-inflammatory food guide pyramid

- Other Protein: 1-2 servings/week animal protein
- Cooked Asian Mushrooms: Unlimited
- Whole soy foods: 1-2 servings per day
- Fish and Seafood: 2-6 servings per week
- Healthy Fats: 3-5 servings per day
- Whole grains: 3-5 servings per day
- Pasta: 2-3 servings per week
Anti-inflammatory food guide pyramid

- Beans and legumes: ½ - 2/3 cup cooked at least 3 times a week
- Vegetables: 4-6 servings per day (3 cups)
- Fruits: 3-4 servings per day (2 cups)
- Nuts: 1 oz at least 5 times a week
- Water: throughout day

Research

- Greater adherence to the Mediterranean diet was significantly associated with a 25% reduction in total mortality and a 33% lower mortality from coronary heart disease (CHD) after 3.7 years of follow up.
- 1,302 people diagnosed with CHD - adherence to the Mediterranean diet was associated with a 27% lower mortality rate and 31% fewer deaths from CHD among people with preexisting heart disease after 3.7 years of follow up.
Metabolic Syndrome/Diabetes

- Research found Mediterranean diet significantly **reduced C-reactive protein** (inflammatory marker) and insulin resistance in people with metabolic syndrome compared with a low-fat diet.
- Greater adherence to the Mediterranean diet was associated with a **35% reduction in the risk of type 2 diabetes** after 4.4 years of follow up.
- **25% lower risk of being hypertensive and a 36% greater probability of having blood pressure controlled**

Metabolic Syndrome/Diabetes

- Mediterranean dietary pattern may be more appropriate than a low-fat diet for people with metabolic syndrome, type 2 diabetes and insulin resistance.
- Mediterranean diet has a positive effect on serum insulin, glucose, lipid levels as well as other metabolic factors that increase risk of CVD.
Mediterranean Diet

- Diabetes prevention - research study: 215 type 2 diabetics followed either low-fat or Mediterranean diet
- After 4 years only 44% of Mediterranean group needed diabetes medication - 70% of low-fat eaters did
- Mediterranean dieters also lost more weight

What about weight gain?

- Mediterranean diet was NOT associated with greater weight gain or greater risk of developing obesity in 7,368 male and female subjects in research studies during a 2.3 year follow up
- Greater high adherence to the Mediterranean diet was associated with a lower likelihood of becoming obese among overweight subjects in the study
Longer Telomeres

- 4,700 women in a study cited in the British Journal of Medicine who ate more Mediterranean foods — such as vegetables, fruit, nuts, legumes, unrefined grains, fish and olive oil — and drank moderate amounts of wine with their meals had longer telomeres in their blood cells.

- Telomeres are sequences of DNA that form protective caps at the ends of chromosomes.
Telomeres

- DNA segments at the ends of our chromosomes that get shorter with each replication.
- When a cell’s telomeres get too short, it can no longer replicate and eventually dies.
- A few cells — namely adult stem cells as well as sperm and egg cells — are not limited by this process, though.

Telomeres

- There are several indications that telomere length is a good predictor of longevity.
- In newborns, telomere length varies from about 8,000-13,000 “base pairs” (DNA letters) in length, and declines by about 20-40 base pairs each year.
- Telomeres are also longer in women than men, mirroring the difference in lifespan between the sexes.
- In elderly twins, the twin with shorter telomeres is roughly three times more likely to die first.
In the study, for every point higher that a woman’s diet scored, her telomere length corresponded with about 1.5 years less of aging, the researchers found. For example, two women with a three-point difference in their diet scores would show, on average, a 4.5-year difference in aging in their telomeres. This is comparable to the difference between smokers and nonsmokers (4.6 years), active and less-active women (4.4 years) and women with high phobic-anxiety scores and low phobic-anxiety scores (6 years), the researchers said.

**Telomeres**

- Telomeres get shorter every time a cell divides, so their length is thought to be a measure of a cell’s aging.
- *Stress and inflammation* may also shorten people’s telomeres
Telomeres

- This is the largest population-based study specifically addressing the association between Mediterranean diet adherence and telomere length in healthy, middle-aged women said the researchers.
- The results further support the benefits of adherence to this diet to promote health and longevity.

Mediterranean Diet

- Decreases practically every heart-disease risk factor:
  - High blood pressure
  - Cholesterol
  - Triglyceride levels
  - C reactive protein
- Research: 605 patients with first heart attack followed diet for 4 years - 50-70% lower risk of having second heart attack, angina or stroke.
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- Reduced Alzheimer’s risk
- JAMA - eating Mediterranean diet cut risk of developing Alzheimer’s disease by 40%
- People who added exercise to diet - 60% less likely to get Alzheimer’s

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- Meta-analysis in British Medical Journal
- 9% reduction in death from heart disease, cancer, Parkinson’s and Alzheimer’s
- Other studies - Mediterranean diet lessens the inflammation and pain of rheumatoid arthritis and cuts risk of getting Lou Gehrig’s disease
Mediterranean Diet

- Research published in Blood, the Journal of the American Society of Hematology
- Consumption of the Mediterranean diet was directly related to lower levels of platelets and white blood cells, which in turn correlated to lower levels of inflammation

Slow Carbs

- Carbohydrates that digest more slowly
- Whole grains
- Fruits/vegetables
- Beans/legumes
- Yogurt (Greek)
- Approximately 40% of calories
- 1200 calories day: 120 grams per day
- 1500 calories day: 150 grams per day
High Glycemic Load Foods
Increase:
- Inflammation
- Risk of heart disease, diabetes
- Examples include:
  - White bread, glucose (GI= 100)
  - Potatoes, white rice
  - Pastries, white flour
  - Sweets, carbonated soft drinks

Lower GI/GL reduces risk
- Examples:
  - Whole grains
  - Fruits
  - Vegetables
  - Legumes
- Or...mixing high GI/GL foods with those with lower GI/GL
What to Eat More of:

- Though there is no single definition of a Mediterranean diet, these are the foods to emphasize:
  - Raw and cooked vegetables
  - Legumes (peas and beans)
  - Fruit - make it your dessert
  - Nuts - ¼ cup per day
  - Seeds such as chia and flaxseeds
  - Unrefined, whole grains: oats, barley, brown rice, whole wheat, quinoa
  - Olive oil
  - Alcohol: up to 1 drink per day for women, 2 for men
What to Eat Less of:

- Poultry
- Eggs - limit to 4 per week
- Dairy foods

Eat and Drink these rarely:
- Red mead (beef, lamb, pork)
- Especially limit processed meats (sausage, pepperoni)
- Sweets and sugary foods and drinks

10 Foods to Avoid -

- Donuts
- White Bread
- Bread with < 3 grams fiber/ slice
- Soda
- Stick Margarines
- White Pasta
- Full Fat Dairy
- Movie Theatre Popcorn
- Luncheon Meats
- Sugar Coated Cereal
WILD SALMON

- Lowers the risk of heart disease and cancer.
- The more omega-3 fish oils you eat; the lower your blood pressure.
- In one study eating the oil in fish cut cancer incidence by over 60%.
- Studies suggest that fish consumption is associated with a lower risk for depression, violent behavior, Alzheimer's disease, Attention Deficit Disorder, Atrial fibrillation.
- TRY TO EAT Wild salmon, halibut, sardines, etc. 2 to 4 times per week.

WALNUTS

- A handful a day can cut your risk of cardiovascular event by as much as 51%.
- Two tablespoons of peanut butter 5 times/week cuts risk of type II diabetes by 20%.
- Along with tea, the easiest way to improve your heart.
- TRY TO EAT a handful of nuts, five times a week.
* Skip the salt and added oils.
WALNUT SIDEKICKS

- Almonds
- Pistachios
- Sesame Seeds
- Peanuts
- Pumpkin and Sunflower Seeds
- Macadamia Nuts
- Pecans
- Hazelnuts
- Cashews

Anti-inflammatory Antioxidants

- Antioxidants: fresh fruit, vegetables, herbs and spices
- Antioxidants help neutralize free radicals - cell damaging molecules
- We create free radicals all day long
Salicylic Acid

- Aspirin is a synthetic derivative of willow bark and salicylic acid is the active component of willow bark.
- Aspirin reduces risk of heart attacks and strokes by preventing platelets from clumping, reducing blood clots.
- Foods high in salicylic acid: berries, prunes, broccoli, spinach, chili peppers, cinnamon, ginger, nutmeg basil, raisins, grapes whole grains, sage.
- Strawberries have ability to inhibit cyclooxygenase or COX much like aspirin and ibuprofen.

Ginger

- Has been shown to lessen pain of knee osteoarthritis when taken in purified, standardized supplement form.
- Can act as a blood thinner.
- Powered dry ginger - one to two capsules (500-1000 mg) twice a day.
Turmeric

- Sometimes called curcumin, turmeric is a mustard-yellow spice from Asia
- Main ingredient in curry
- Scientific studies show turmeric may help suppress inflammatory body chemicals
- 400-600 mg of turmeric extracts 3 times per day
- Look for standardized for 95% curcuminoids

Zyflamend

- Herbal remedy by New Chapter
- Combination of herbs such as holy basil, turmeric, rosemary, green tea, oregano, ginger, etc.
- Used in research studies at Columbia University
- One tablet twice a day
Red Wine

- Lowers inflammatory substances
- Long associated with lowered risk of heart attack and stroke - so called “French Paradox”
- Also contains polyphenols and flavonoids with antioxidant properties
- No more than 1 drink per day for women, two per day for men

Isoflavones

- Soy beans, tofu and soy products - powerful inflammation fighters
- Great source of protein without pro-inflammatory components of red meat
- Red meat high in arachidonic acid, a type of fatty acid that increases inflammation
Herbs and Spices

■ Herbs and spices add flavors and aromas to foods, reducing the need to add salt or fat when cooking.
■ They are also rich in a broad range of health-promoting antioxidants, and are used liberally in Mediterranean cuisines.
■ Herbs and spices also contribute to the national identities of the various Mediterranean cuisines.
■ Herbs and spices common to the traditional Mediterranean Diet include: anise, basil, bay leaf, chiles, cloves, cumin, fennel, garlic, lavender, marjoram, mint, oregano, parsley, pepper, rosemary, sage, savory, sumac, tarragon, thyme.

A Day in The Life

■ **Breakfast:** Greek yogurt with strawberries and oats with a sprinkling of walnuts on top.
■ **Lunch:** Whole grain sandwich with turkey and hummus with vegetables.
■ **Dinner:** Broiled salmon, served with brown rice and vegetables.
■ **Fruit for dessert**
■ **Handful of nuts and an apple for snack**
Mediterranean Diet

- Newsletter - Fresh Fridays - Free
- Mediterraneanmark.org
- Oldways.org
- Recipes & research on the diet