THE MAKING OF A HEALTHY HEART: THE ROLE OF NUTRITION

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PREVALENCE OF HEART DISEASE

• CORONARY ARTERY DISEASE IS BECOMING MORE PREVALENT IN CONGENITAL HEART DISEASE PATIENTS AS
  • MANAGEMENT OF THE ILLNESS HAS IMPROVED AND PATIENTS ARE LIVING LONGER
  • AS CONGENITAL HEART DISEASE PATIENTS ARE AGING, THE RATES OF CORONARY ARTERY DISEASE ARE EQUAL TO GENERAL POPULATION

Physical inactivity, obesity, diabetes, and acquired cardiovascular disease (CVD) may be at least as prevalent in patients with congenital heart disease as in the general population.

Only 20% of congenital heart patients have a “heart healthy” lifestyle.

The remaining have at least one cardiovascular risk factor for heart disease.

Focusing on a heart healthy lifestyle early on will pave the way.
NUTRITION

• AMONG THE TOP 17 RISK FACTORS, POOR DIET QUALITY HAS BEEN IDENTIFIED BY THE US BURDEN OF DISEASE COLLABORATORS AS THE LEADING CAUSE OF PREMATURE DEATHS AND DISABILITY IN THE UNITED STATES

• IF THE TREND CONTINUES, 1 IN 3 PEOPLE WILL BE DIABETIC BY 2050

• ALTHOUGH NUTRITION IS NOTED TO BE KEY FOR HEALTH AND WELLNESS, NUTRITIONAL INTERVENTIONS ARE NOT TYPICALLY EMPHASIZED IN PRACTICE

• MOST PHYSICIANS LACK EDUCATION ON NUTRITION

STATE OF US HEALTH STUDY

- DIETS ARE TOO HIGH IN
  - PROCESSED MEATS
  - SODIUM
- DIETS ARE TOO LOW IN
  - FRUITS AND VEGETABLES
WHAT IS THE RIGHT DIET?

• PLANT BASED, WHOLE GRAIN, FRESH DIET
• WHAT IS ALL THE HYPE ABOUT THE MEDITERRANEAN DIET?
• THE AMERICAN HEART ASSOCIATION RECOMMENDS EATING EIGHT OR MORE FRUIT AND VEGETABLE SERVINGS EVERY DAY.
WHAT FOODS SHOULD WE BE ADVOCATING?

- DARK BLUE AND RED FRUITS LIKE BLUEBERRIES AND STRAWBERRIES?
- FULL OF ANTHOCYANINS AND FLAVONOIDS WHICH ARE ANTI-INFLAMMATORY AND LOWER BLOOD PRESSURES
- 93, 600 WOMEN 25 TO 42 YEARS OF AGE FROM THE NURSES' HEALTH STUDY
- AN INVERSE ASSOCIATION BETWEEN HIGHER INTAKE OF ANTHOCYANINS AND RISK OF MI WAS OBSERVED (HAZARD RATIO, 0.68)
- 34% REDUCTION IN MYOCARDIAL INFARCTIONS IN CONSUMING >3 SERVINGS A WEEK COMPARED LOWEST QUINTILES
LEAFY GREEN VEGETABLES

- EACH DAILY SERVING IS ASSOCIATED WITH 23% REDUCTION IN CARDIOVASCULAR DISEASE
- FOLIC ACID IS LIKELY THE KEY INGREDIENT
- SPINACH AND KALE
- FOLIC ACID SUPPLEMENTS ARE NOT CARDIOPROTECTIVE.
WHOLE GRAINS-IOWA WOMEN’S HEALTH STUDY

• 34,492 POSTMENOPAUSAL WOMEN AGED 55-69 Y AND FREE OF IHD AT BASELINE
• A CLEAR INVERSE ASSOCIATION BETWEEN WHOLE-GRAIN INTAKE AND RISK OF IHD DEATH EXISTED.
• THE LOWER RISK WITH HIGHER WHOLE-GRAIN INTAKE WAS NOT EXPLAINED BY INTAKE OF FIBER OR SEVERAL OTHER CONSTITUENTS OF WHOLE GRAINS.

WHOLE GRAINS-NURSES HEALTH STUDY

- 75521 women aged 38–63 y with no previous history of cardiovascular disease or diabetes
- Observational
- The inverse relation between whole-grain intake and CHD risk was even stronger in the subgroup of never smokers
- Highest quintile of whole grain intake (>3 servings per day) was associated with a 25% reduction in cardiovascular disease
NUTS

• 33% REDUCTION IN CV DISEASE IF EAT ALL NUTS COMBINES, 4 TIMES PER WEEK
• DESPITE THE HIGH CALORIE DENSITY, THERE WAS NO ASSOCIATED INCREASE IN WEIGHT

FISH

• IN THE US PHYSICIANS HEALTH STUDY, 22,071 US MALE PHYSICIANS WHO WERE 40 TO 84 YEARS OLD AND HAD NO HISTORY OF MYOCARDIAL INFARCTION OR CEREBROVASCULAR DISEASE.

• SURVEY

• RESULTS SHOWED THAT EVEN ONE SERVING OF FISH PER WEEK WAS INVERSELY RELATED TO THE RISK OF SUDDEN CARDIAC DEATH.

• IMPORTANTLY, THERE WAS NO ASSOCIATION BETWEEN FISH CONSUMPTION AND MYOCARDIAL INFARCTION.

Very High Omega-3s, Low Mercury, Sustainable
- Wild salmon
- Sardines
- Mussels
- Rainbow trout
- Atlantic mackerel

High Omega-3s, Low Mercury
- Oysters
- Anchovies
- Pollock/Imitation crab
- Herring

Low Mercury But Also Low Omega-3s
- Shrimp
- Catfish
- Tilapia
- Clams
- Scallops
Mercury Risks Add Up Pregnant Women And Children Should Limit Or Avoid
• Canned light and albacore tuna
• Halibut
• Lobster
• Mahi mahi
• Sea bass
These fish contain too much mercury to be part of the regular diet of pregnant women and children.

Avoid Mercury Levels Too High To Eat Regularly
• Shark
• Swordfish
• Tilefish
• King mackerel
• Marlin
• Bluefin and bigeye tuna steaks or sushi
• Orange roughy

EWG’s Consumer Guide to Seafood: Executive Summary
WHY IS THE DIET SO IMPORTANT?  
MICROBIOTA/MICROBIOME

• DEFINITIONS

• IT IS ESTIMATED THAT 90% OF CELLS (APPROXIMATED 100 TRILLION CELLS) FOUND IN OUR BODIES ARE NOT HUMAN

• ONLY 10% HUMAN AND THE REMAINDER IS MICROBIAL.

• MICROBIOME: EACH OF THESE BACTERIA IN OUR BODY CARRIES GENETIC MATERIAL.

• SOME PEOPLE CALL THIS MICROBIOME, OUR “SECOND GENOME” OR OUR SECOND BRAIN
TMAO

A graph shows the cumulative incidence of myocardial infarction, stroke, or death (%) over years for different quartiles, with Quartile 4 having the highest risk and Quartile 1 having the lowest. The graph indicates a statistically significant difference (P<0.001) by log-rank test.

The table below outlines the number of participants at risk in each quartile:

<table>
<thead>
<tr>
<th>Quartile</th>
<th>No. at Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartile 1</td>
<td>1001</td>
</tr>
<tr>
<td>Quartile 2</td>
<td>998</td>
</tr>
<tr>
<td>Quartile 3</td>
<td>1003</td>
</tr>
<tr>
<td>Quartile 4</td>
<td>1005</td>
</tr>
</tbody>
</table>
THE NEED FOR SPEED: PROCESSED FOODS

- Refined Foods
- Fried
- Instant
- Lean Cuisine
FULL BAN

• IN EFFECT IN 2018
• UNTIL THEN AVOID:
• FOR NOW, IF SAYS 0 TRANS FATS, REMEMBER BUSINESSES DO NOT HAVE TO MENTION 0.5 GRAMS OR LESS
• LOOK FOR ANYTHING HYDROGENATED, PARTIALLY HYDROGENATED
VEGAN PROTEIN SOURCES
PER 100 GRAMS OR 1 OZ

- Lentil Flour: 28g/100g, 8g/1oz
- Pumpkin Seeds: 20g/100g, 7g/1oz
- Peanut Butter: 25g/100g, 6g/1oz
- Tahini: 21g/100g, 6g/1oz
- Almonds: 81g/100g, 5g/1oz
- Pistachios: 21g/100g, 6g/1oz
- Flax Seeds: 16g/100g, 6g/1oz
- Cashews: 16g/100g, 5g/1oz
- Oats: 17g/100g, 5g/1oz
- Soybeans: 21g/100g, 9g/1oz
- Chia Seeds: 16g/100g, 4g/1oz
- Tofu: 16g/100g, 4g/1oz
- Hazelnut: 15g/100g, 4g/1oz
- Walnut: 15g/100g, 4g/1oz
- Whole Wheat Bread: 11g/100g, 3g/1oz
- Lentils: 9g/100g, 3g/1oz
- Chickpeas: 9g/100g, 3g/1oz
- Red Beans: 9g/100g, 3g/1oz
- Pecans: 5g/100g, 3g/1oz
- Lima Beans: 6g/100g, 2g/1oz
- Macadamia Nuts: 18g/100g, 2g/1oz
- Peas: 4g/100g, 1g/1oz
- Quinoa: 4g/100g, 1g/1oz
- Spinach: 2g/100g, 1g/1oz
- Potato: 2g/100g, 1g/1oz

[PROTEIN CONTENT FOR A SERVING SIZE OF COOKED LEGUMES]

mikimottes.com
HOW ARE WE DOING AS A SOCIETY?

- In 2005, approximately 32.6% of the U.S. adult population surveyed consumed fruit two or more times per day.
- 27.2% ate vegetables three or more times per day.
- The prevalence of consuming fruit two or more times per day was 28.7% among women and 36.4% among men.
- The prevalence of eating vegetables three or more times per day was 22.1% among men and 32.2% among women.
## Dietary Habits of Cardiovascular Professionals

### Average Servings of Fruits and Vegetables per Day

<table>
<thead>
<tr>
<th>Servings/day</th>
<th>MD</th>
<th>FIT</th>
<th>CV Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 servings/day</td>
<td>0.2%</td>
<td>1.3%</td>
<td>0.8%</td>
</tr>
<tr>
<td>1 serving/day</td>
<td>11.1%</td>
<td>16.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>2 servings/day</td>
<td>16.0%</td>
<td>16.0%</td>
<td>21.5%</td>
</tr>
<tr>
<td>3 servings/day</td>
<td>14.7%</td>
<td>30.7%</td>
<td>20.1%</td>
</tr>
<tr>
<td>4 servings/day</td>
<td>17.0%</td>
<td>29.0%</td>
<td>20.2%</td>
</tr>
<tr>
<td>5 or more servings/day</td>
<td>20.4%</td>
<td>22.8%</td>
<td>25.8%</td>
</tr>
<tr>
<td>Not Answered</td>
<td>0.8%</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>
IT IS JUST SO CONFUSING OUT THERE

• FOOD LABELING HAS BECOME A REAL PROBLEM
  • WHAT IS A SERVING SIZE?
  • WHAT DOES WHOLE GRAIN MEAN?
  • PRESERVATIVE
SERVING SIZE

• 1 CUP RAW VEGETABLES
• ½ CUP VEGETABLE JUICE OR COOKED VEGETABLES
• 1 MEDIUM FRUIT, SIZE OF A BASEBALL
Farmhouse hearty sliced bread

FRESH FROM THE OVEN TASTE

100% WHOLE WHEAT

NO HIGH FRUCTOSE CORN SYRUP

Dietary Fiber 3g
Sugar 3g
Protein 4g

Vitamin C 1%
Iron 8%
Riboflavin 8%
Folate 8%

Calories: 2,000 2,500
Total Fat Less than 65g 80g
Sat Fat Less than 20g 25g
Cholesterol Less than 300mg 300mg
Sodium Less than 2,400mg 2,400mg
Total Carbohydrate 300g 375g
Dietary Fiber 25g 30g

MADE FROM: WHOLE WHEAT FLOUR, WATER, SUGAR, WHEAT GLUTEN, SOYBEAN OIL, YEAST, MILK.
CONTAINS 2 PERCENT OR LESS OF: OAT FIBER, SALT, MONOGLYCERIDES, CALCIUM PROPOXIMATE AND SORBIC ACID TO RETARD SPOilage, BUTTER (MILK), SODIUM STEAROYL LACTYLATE, SOY LECITHIN, WHEY*, CITRIC ACID.

*ADDs A TRIVIAL AMOUNT OF CHOLESTEROL.
CONTAINS: WHEAT, MILK, SOY.

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TAKE HOME POINTS

- ELIMINATION IS AS IMPORTANT AS WHAT YOU ADD BACK: THE WEEKEND WARRIOR
- AT LEAST 5-7>> CLOSER TO 8! SERVINGS OF FRUITS AND VEGETABLES PER DAY
- WHOLE GRAINS
- SOY
- NUTS AND SEEDS
- SPICES-TURMERIC, CINNAMON
- FRESH, FRESH, FRESH
Eat a Rainbow

How many colours can you eat today?
CONCLUSIONS

• SHIFT BALANCE OF FATS
• SATURATED FATS TO MONO AND POLY UNSATURATED FATS
• WATCH OUT FOR TRANS-FATS STILL IN A LOT OF YOUR FOODS
• HEALTHY FATS COME FROM: NUTS, SEEDS, AVOCADO, FISH
• EGG IS CONTROVERSIAL
• OLIVE OIL GOOD OR LESS BAD IS UNCLEAR.
CONCLUSIONS 2

• As a society, we are not doing a good job with this
• Data supports changes in diet reducing CV disease
• The key is the microbiome
• The women is the head of the household. If we educate the head of the household, we heal the family.
• We as physicians need to do a better job in eating better and then also educating our patients to eat better