

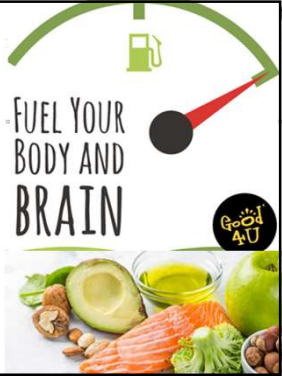
Putting the EYE in Nutrition

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Today's Goal


- Start thinking about food and beverage consumption differently
- Start thinking of it as fuel for the brain and the body
- Share some tools that you can implement in your practice with your patients
- Start thinking about change behavior so that you can model what you preach



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Financial disclosures

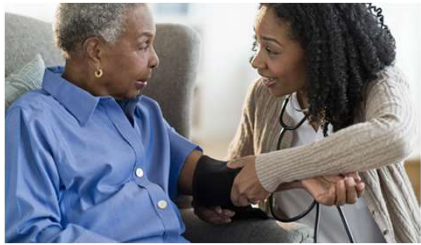
- Dr. Newsome has no relevant financial interests with this presentation.



"This affiliation will not affect the content of this presentation"

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Think About your Patients



- Patient presents with hypertension and BMI of 30+
- Also has complaints of dry eye
- What should you be thinking of and why?

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The New York Times

Opinion

Our Food Is Killing Too Many of Us

Improving American nutrition would make the biggest impact on our health care.

By Dariush Mozaffarian and Dan Glickman
Mr. Mozaffarian is dean of the Tufts Friedman School of Nutrition Science and Policy. Mr. Glickman was the secretary of agriculture from 1995 to 2001.

Aug. 26, 2019

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"Poor diet is the leading cause of mortality in the United States, causing more than half a million deaths per year."

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Emily Chew, MD


"You are what you eat", said Emily Chew, MD, a clinical spokesperson for the American Academy of Ophthalmology, who serves on an advisory board to the research group conducting the study, said in an AAO news release. "I believe this is a public health issue on the same scale as smoking. Chronic diseases such as AMD, dementia, obesity, and diabetes, all have roots in poor dietary habits. It's time to take quitting a poor diet as seriously as quitting smoking."



Director, Division of Epidemiology and Clinical Applications Medical Officer
National Eye Institute (NEI)
National Institutes of Health (NIH), Bethesda, MD

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- It is estimated that lifestyle decisions account for over 70% of our chronic disease states
- Even when we have a genetic predisposition, we can mitigate that with healthy choices including diet, exercise and better managing stress



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“Nutrition is a process in which food is taken in and used by the body for growth, to keep the body healthy, and to replace tissue. Good **nutrition** is important for good health. Eating the right kinds of foods before, during, and after **cancer** treatment can help the patient feel better and stay stronger.” Apr 19, 2017

Nutrition in Cancer Care (PDQ®)—Patient Version - ...
National Cancer Institute (.gov) · treatment

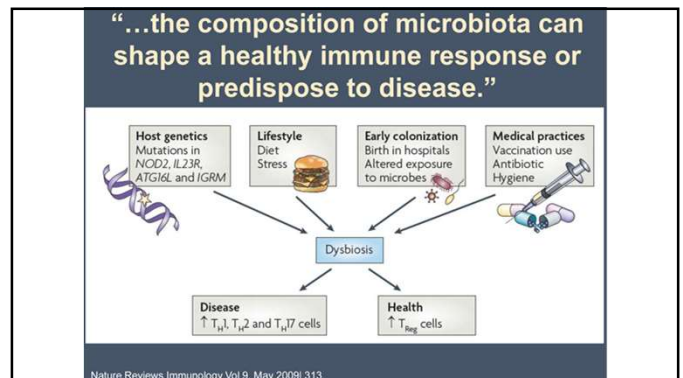
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Nutrition

- Nutrients are involved in all body processes at the cellular level.
- Involved for Immune system functioning
- Enables our body to repair and regenerate
- Enhances our ability to think clearly and effectively



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All Disease starts in the Gut

- Hippocrates
- Father of Medicine
- 460-370 BC
- Greek physician


Wikipedia: Hippocrates



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Nutrition

MACRONUTRIENTS VS **MICRONUTRIENTS**

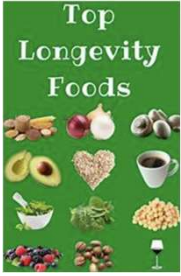


Macronutrients include protein, fat, carbohydrates and water.

Micronutrients are the minerals, Vitamins and Phyto chemicals in our food.

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Longevity



If we are interested in increasing our life spans, we have to decrease or manage chronic inflammation or slow long term inflammation that lasts for several months to years


Pahwa et al, Chronic Inflammation NCBI, 9/2021

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Chronicity of Inflammation

Typically, it is the chronicity of inflammation that causes issue with our health and minimized our longevity.

Think of chronicity of inflammation as the antithesis of wellness.



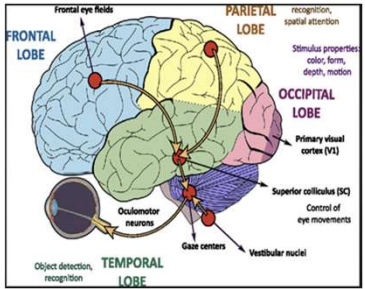
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The Eye is Part of the Brain



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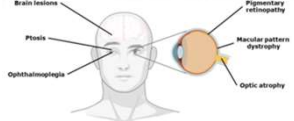
Eye is part of the brain-not only is it a part of the brain but one of the more metabolically active parts of the brain.



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The eye is one of the most metabolically active organs in the body

- Oxidative Stress seems to be a common causative agent in these diseases
- High Oxygen consumption
- High concentration of PUFA
- Cumulative exposure to high energy visible light
- Mitochondrial dysfunction

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So if it is good for the brain, it is good for the Eye

STOP EATING

C. R. A. P.

Carbonated Drinks Refined Sugars Artificial Foods Processed Foods



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These nutrients have been shown in studies to maximize positive ocular health outcomes

- Vitamins A, D, E, C
- B vitamins such as folate, B6, B12, thiamine, riboflavin, niacin
- Carotenoids such as alpha and beta-carotene, lutein, zeaxanthin, lycopene
- Minerals such as magnesium, calcium, zinc, iron, and copper
- Fatty acids EPA & DHA from fish or algae sources



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These are some factors that Negative Healthy ocular outcomes

- Cholesterol
- Saturated fats
- Monosaturated fats (meat/dairy sources)
- Omega 6's
- ALA (Vegetable omega 3's such as flax seeds, chia, and soy oil)
- Arachidonic acid



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What the data showed about eating a Mediterranean Type Diet

- Eating a Mediterranean diet, particularly a lot of fish, may be beneficial for those with early or even intermediate age-related macular degeneration (AMD)
- A diet high in fish can reduce the chances of developing late AMD by 65% for patients who also have protective genes
- In the general AMD population, a high fish diet reduced progression of intermediate AMD, with bilateral large drusen, to geographic atrophy by 31%.
- High adherence to a Mediterranean diet reduced progression from intermediate to late AMD, with geographic atrophy or neovascularization, by 25-to-40%.

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What the data shows about eating a Mediterranean Type Diet

- A Mediterranean diet was defined as one high in fruits, vegetables, nuts and legumes, moderate in fish, white meat and whole grains, moderate-to-low in alcohol and low in red meat and refined sugar, with a high ratio of mono-unsaturated to saturated fat intake.



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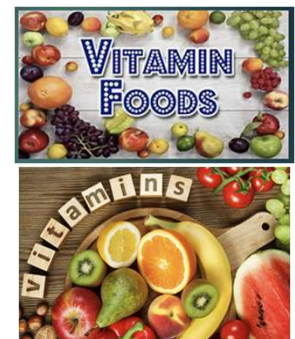
My top 10 ocular superfoods

1. Avocado
2. Kiwi
3. Spinach
4. Kale
5. Carrots
6. Walnuts
7. Blueberries
8. Eggs
9. Salmon
10. Green Tea



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- Organic compound required as a nutrient by an organism. Vital amine.
- Fat soluble-stored in the fat cells of your body.
- A, D, E, K
- Water Soluble-eliminated the same day you ingest
- B, C



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- Best to take vitamins with a full glass of water
- Fat soluble vitamins are best taken once per day
- Water soluble vitamins are best taken twice per day so if you are to take 100 milligrams per day then on a H₂O vitamins, take 50mg in the morning and 50mg in the afternoon



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Vitamin A



- Two Groups
- Retinoids (aldehydes)-like retinal & retinoic acid
- Come from animals and are in an active form that can be used by the body
- Carotenoids-over 700 found in plants-provitamins-as stored in liver and converted when needed-alpha, beta, and gamma carotene most popular

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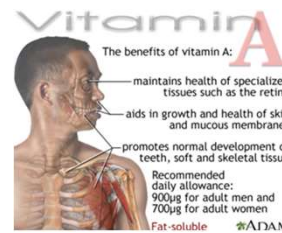
Functions of Vitamin A in Body



- Immune Function
- Growth and support of skin
- Detoxifies PCB, dioxins, & industrial wastes
- Good vision
- Healthy Mucous membranes
- Strengthens bones
- Reduce Cancer Risk- Esophageal, skin, leukemia, bladder, stomach.

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Symptoms of a Vitamin A Deficiency



- Night blindness
- Dry eye
- Fatigue
- Susceptibility to infections
- Rough scaly skin
- Yeast infections
- Poor wound healing
- Poor tooth and bone function

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Specific Carotenoids

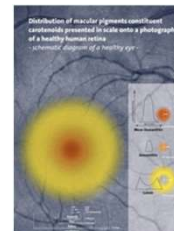
- Lycopene-dark leafy vegetables, cooked tomatoes, pink grapefruit, guava
- Decreases LDL-bad cholesterol
- Lowers blood pressure
- 5-20 mg daily



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Carotenoids

- Lutein and Zeaxanthin-found in the retina and help eye absorb light while protecting the retina from free radicals
- Egg Yolks, collard greens, corn, leafy veggies
- 6-12 mg daily



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Vitamin D

- Not really a vitamin but a hormone
- Could perhaps change the face of health care in the US with supplementation
- Responsible for CV health
- Immune System
- Depression

WHAT'S YOUR
VITAMIN D LEVELS
(25 Hydroxy D Level)

DEFICIENT	0-30 ng/ml
LOW	30-50 ng/ml
HEALTHY	50-70 ng/ml
TOO MUCH	100+ ng/ml

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Vitamin D

Two forms that have most importance

- D2 which is more responsible for UV absorption from the sun-ergocalciferol
- D3 which is more responsible for other tasks-cholecalciferol

VITAMIN D SOURCES

CONTRIBUTES TO BONES HEALTH
HELPS MANAGE BLOOD SUGAR LEVELS
FACILITATES HORMONE REGULATION
ENHANCES THE IMMUNE SYSTEM
PROTECTS AGAINST CANCER
HELPS WITH CONCENTRATION LEARNING AND MEMORY
IMPROVES HEART HEALTH

SUNLIGHT PROMOTES SYNTHESIS IN THE SKIN
COD LIVER OIL
RAW MILK
SALMON
MUSHROOMS
EGGS
MACKEREL
TUNA
SARDINES
CAVIAR

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Vitamin D

- Aids in absorption of Ca from the intestines
- Aids in assimilation of phosphorus
- Helps the pancreas create insulin
- Necessary for blood clotting
- Necessary for bones and teeth
- Necessary for thyroid function
- Stimulates cone cell mineralization

VITAMIN D deficiency

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What causes your body to make less from the sun

- Aging
- Decreased fat absorption
- Fat blocking medications
- Prednisone
- Sunscreen
- Medications

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Vitamin E

- There are 8 forms
- Tocopherols and Tocotrienols
- Alpha is most active form
- Recommended dose 100 – 400 mg daily

Foods high in Vitamin E (with benefits)

Almond	Avocado	Peanuts
Coconut Oil	Sunflower Oil	Olive Oil
Spinach	Broccoli	Kale HOWRIC

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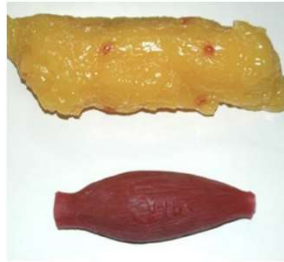
Vitamin C

- Can not be made by our bodies so must be consumed
- Especially important for PWD people with diabetes as it competes with glucose for receptor sites
- Aids in wound healing
- Aids in synthesis of collagen
- Increases the number of WBC and interferons

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Fats

- Does the body need fat and if so, why?
- Greek word for fat is lipos from which we get lipid
- Liquid fats are oils
- Solid fats are Fat
- Fat in food is called dietary fat



1 lb of Muscle

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High Energy Nutrients

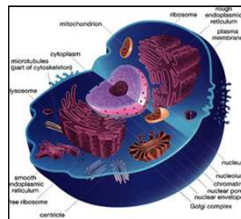
- Cholesterol is the only fat that has no calories and provides no energy
- Dietary fats are high energy nutrients and have 2 times as much energy potential as protein or carbohydrates



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Importance of FAT

- Part of every cell membrane
- Component of myelin
- Constituent of hormones
- Shock absorber for your organs



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Benefits of Fats

- Source of stored energy
- Gives body its shape
- Cushions your skin
- Acts as an insulation blanket to reduce heat loss



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All fats in the body are combos of FA

- Saturated Fats-solid fats SFA like butter
- Marbelizing that you see in meats is saturated fat
- Liver uses SFA to manufacture cholesterol
- Raises your LDL



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MUSF


- Monounsaturated fats-liquid like olive oil at room temperature but get thicker when chilled
- These lower your LDL without impacting your HDL
- Mostly vegetable and nut oils



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PUFA


- Polyunsaturated fats-PUFA-liquid regardless of room temperature like corn oil
- Corn, soybean oil, sunflower oil
- Thought to decrease your cholesterol however too much can lower your HDL
- No more than 10% of your dietary intake



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Trans Fats

Traumatizing Trans Fats



Why is margarine a solid?

- Because it has been chemically altered by hydrogenation
- Trans fats are hydrogenated fatty acids
- Increases flavor and shelf life of foods

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Your Diet and Fat


- Balance
- Too much and you increase your risk for diabetes, hypertension obesity and some forms of cancer
- Too little and children do not thrive and grow



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Essential Fatty Acids

- Most widely discussed are the Omega 3's and the Omega 6's
- Omega 6's are plentiful in our diets and are found in almost everything we eat
- If 6 is not balanced with 3 leads the body to inflammatory state

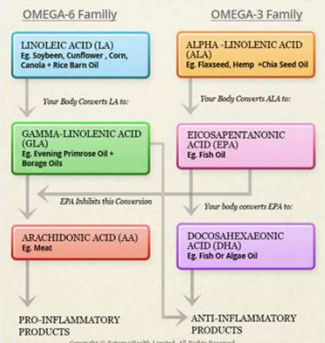


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Omega 6

- Arachidonic Acid-occurs in meats
- DGLA-dihomogammalinoleic-Mother's milk
- GLA-black current, borage oil, evening primrose
- Linoleic acid-flax oil, hemp, pumpkin, safflower, sesame, soybean, sunflower, walnut
- Too much 6 leads to chronic inflammation


Essential Fatty Acid Pathways



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DHA

- Long chain Omega 3 FA which is found in highest concentrations in the brain and in the retina
- Gray matter of the brain
- Also a key component of the heart
- Necessary for metabolism long chains of PUFA
- Associated with depression and suicide



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ARA

- Long chain from omega 6 and is found in the brain and in other parts of the body
- Vital component of developing infants
- Precursor for Eicosanoids which are your signaling cells
- Important for blood clotting and lots of other body functions



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Questions?

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