



Eating for Your Micros

dotFIT Masterclass

Founder/CEO
Neal Spruce &
VP of Nutrition
Services, Kat
Barefield, MS,
RD, CPT

Content to be Presented



The Role of Micronutrients in Human Health

What are they and what do they do?

Recommended Dietary Allowances

How much do you need?

Eating Patterns to Maximize Micronutrient Intake

Can you get all your micros from food?

Common Under-consumed Vitamins and Minerals

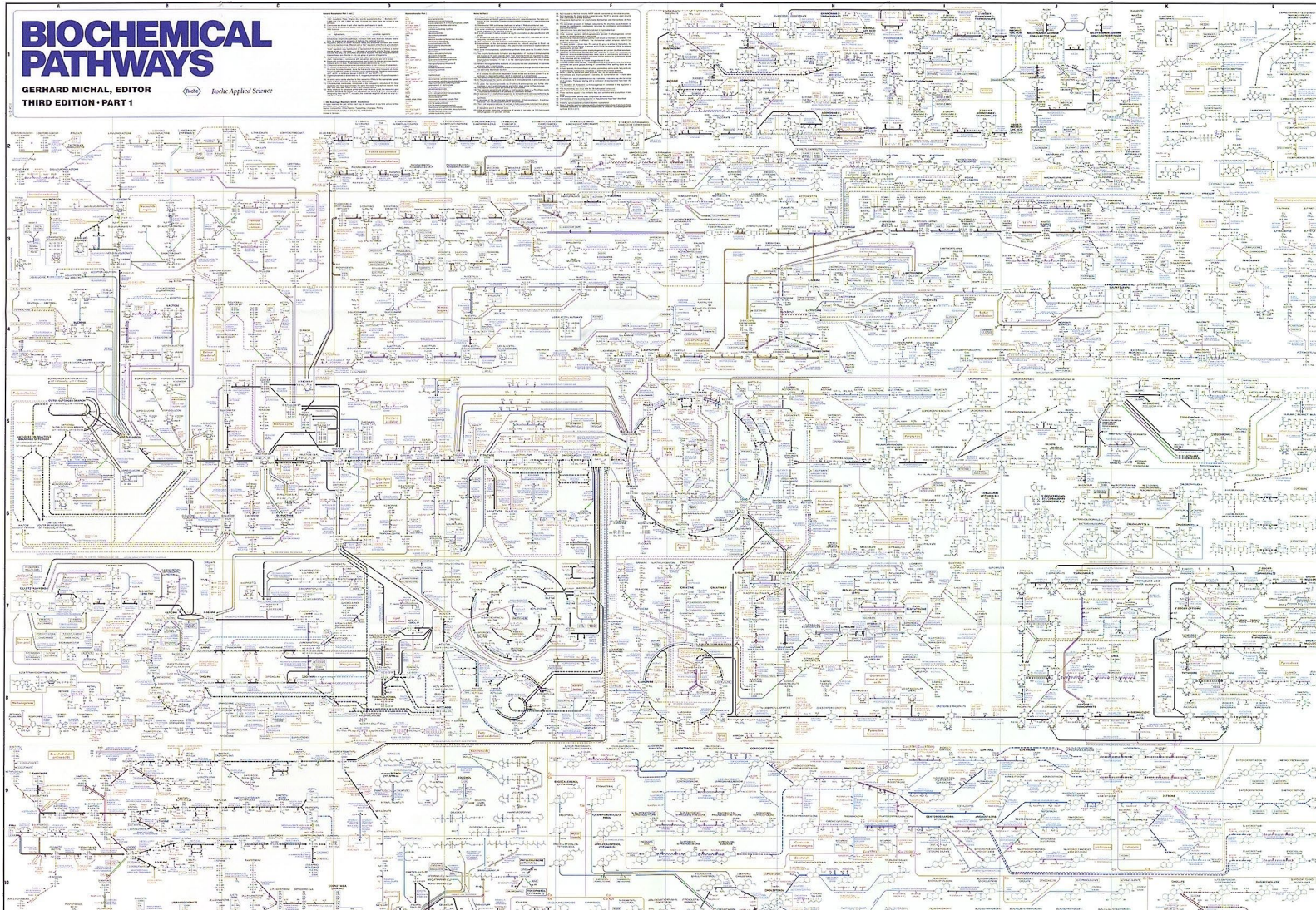
Are people getting enough?

Consequences of Micronutrient Shortages

What happens when you don't get enough?

Evidence Based Strategies - Research Look

What does the science show?



This is Your
Metabolism

Nutrients Keep Your Metabolism Running

- 6 Classes:
 - Carbohydrates
 - Protein
 - Fats
 - Vitamins
 - Minerals
 - Water
- (And oxygen)

WHAT ARE MACRONUTRIENTS?

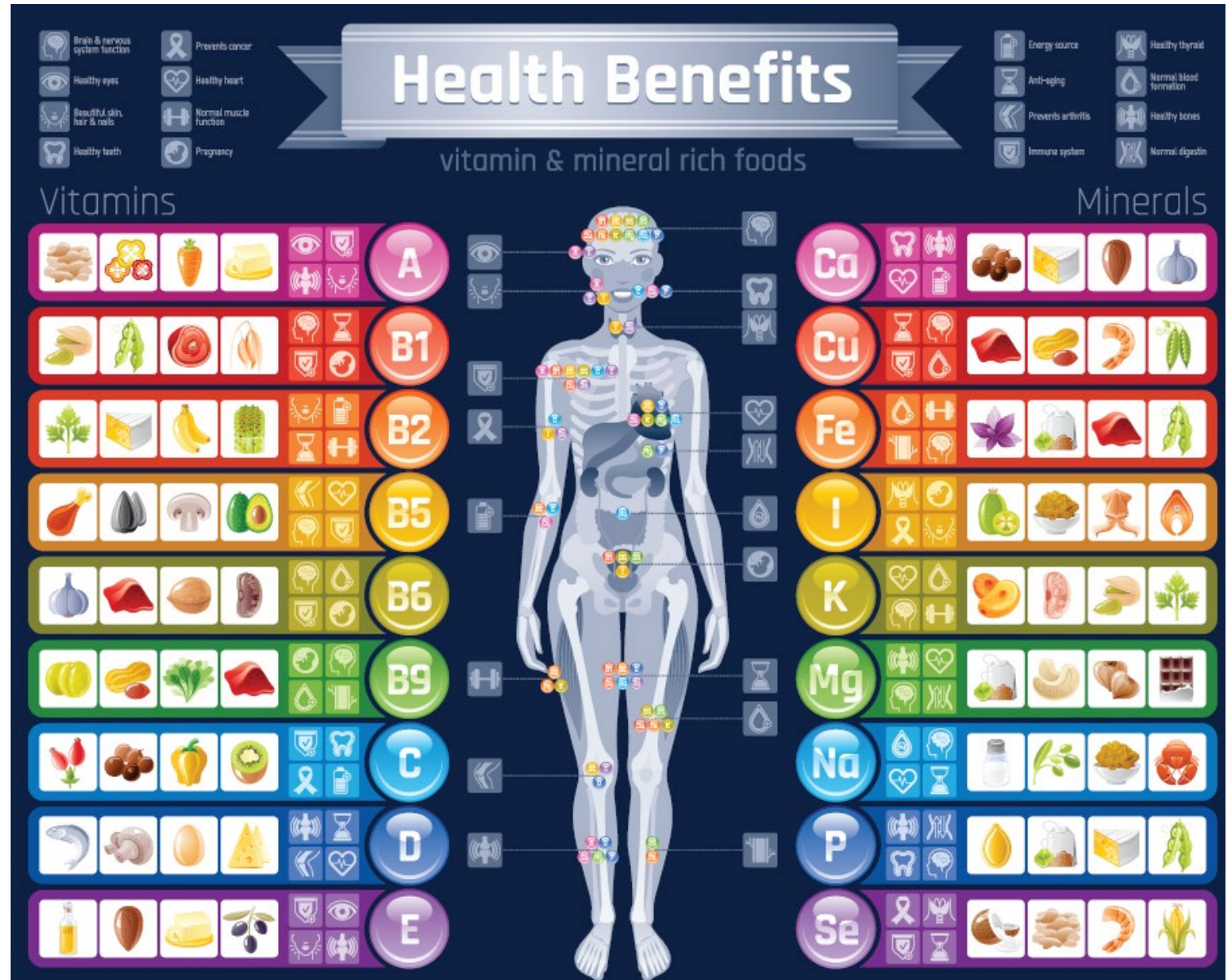
THERE ARE 4 CATEGORIES OF MACRONUTRIENTS:

CARBS  FRUITS, GRAINS, POTATOES, VEGETABLES CALORIES PER GRAM: 4	PROTEIN  MEAT, SEAFOOD, DAIRY, FISH, EGGS CALORIES PER GRAM: 4
FAT  BUTTER, OILS, AVOCADOS, NUTS, EGGS YOLKS CALORIES PER GRAM: 9	ALCOHOL  WINE, BEER, COCKTAILS, SPIRITS CALORIES PER GRAM: 7

Micronutrients Serve As Cofactors in Metabolic Pathways

~30 vitamins and minerals:

- B vitamins are needed to extract energy (calories) from food
- Vitamin D is required to form bone, strong immune function and in 1,000 different biological processes
- Vitamin E is an antioxidant and helps protect cells from damage
- Vitamin K is needed to form blood clots and to shuttle calcium into bone
- Magnesium regulates muscle contraction and nerve transmission and is needed for repairing DNA.
- Iron is required to transport oxygen throughout the body



Daily Requirements

Scientists at the Institute of Medicine Set the Dietary Recommended Intakes (DRIs) for the 30 Vitamins and Minerals:

- RDA (recommended daily intake)
- EARs (estimated average requirement)
- AI (adequate intake)
- UL (tolerable upper limit)

Based on age, gender, life stage.

Aim to prevent deficiency not optimize quality of life and healthy aging

	B6 (mg)	B12 (mcg)	Choline (mg)	Calcium (mg)	Magnesium (mg)	Potassium ¹ (mg)	Iron (mg)
Males							
14-18 y	1.3	2.4	550	1,300	410	3,000	11
19-30 y	1.3	2.4	550	1,000	400	3,400	8
31-50 y	1.3	2.4	550	1,000	420	3,400	8
51-70 y	1.7	2.4*	550	1,000	420	3,400	8
>70 y	1.7	2.4*	550	1,200	420	3,400	8
Females							
14-18 y	1.2	2.4	400	1,300	360	2,300	15
19-30 y	1.3	2.4	425	1,000	310	2,600	18
31-50 y	1.3	2.4	425	1,000	320	2,600	18
51-70 y	1.5	2.4*	425	1,200	320	2,600	8
>70 y	1.5	2.4*	425	1,200	320	2,600	8
Pregnancy							
19-50 y	1.9	2.6	450	1,000	350-360	2,900	27
Breastfeeding							
19-50 y	2.0	2.8	550	1,000	310-320	2,800	9

*Should be in fortified foods or supplemental free form due to age-related food-bound malabsorption

Key Takeaway

Consume a wide variety of minimally processed foods from all food groups to maximize micronutrient intake while staying within calorie needs to achieve and maintain a healthy body weight

Carbohydrates



Fats

Proteins

Sample Micronutrient Rich Diet for 2,200 calories/day

3 cups of vegetables a day, distributed as follows:

- 2 cups per week of dark-green vegetables
- 6 cups per week of red and orange vegetables
- 2 cups per week of legumes (beans and peas)
- 6 cups per week of starchy veggies (potatoes, green peas, corn)
- 5 cups per week of other (iceberg lettuce, mushrooms, onions)

2 cups a day of fruit (vary regularly)

3 ½ ounces of whole grains (whole wheat bread, brown rice, oatmeal)

3 ½ ounces of other refined enriched grains (white rice, refined grain cereals, pasta)

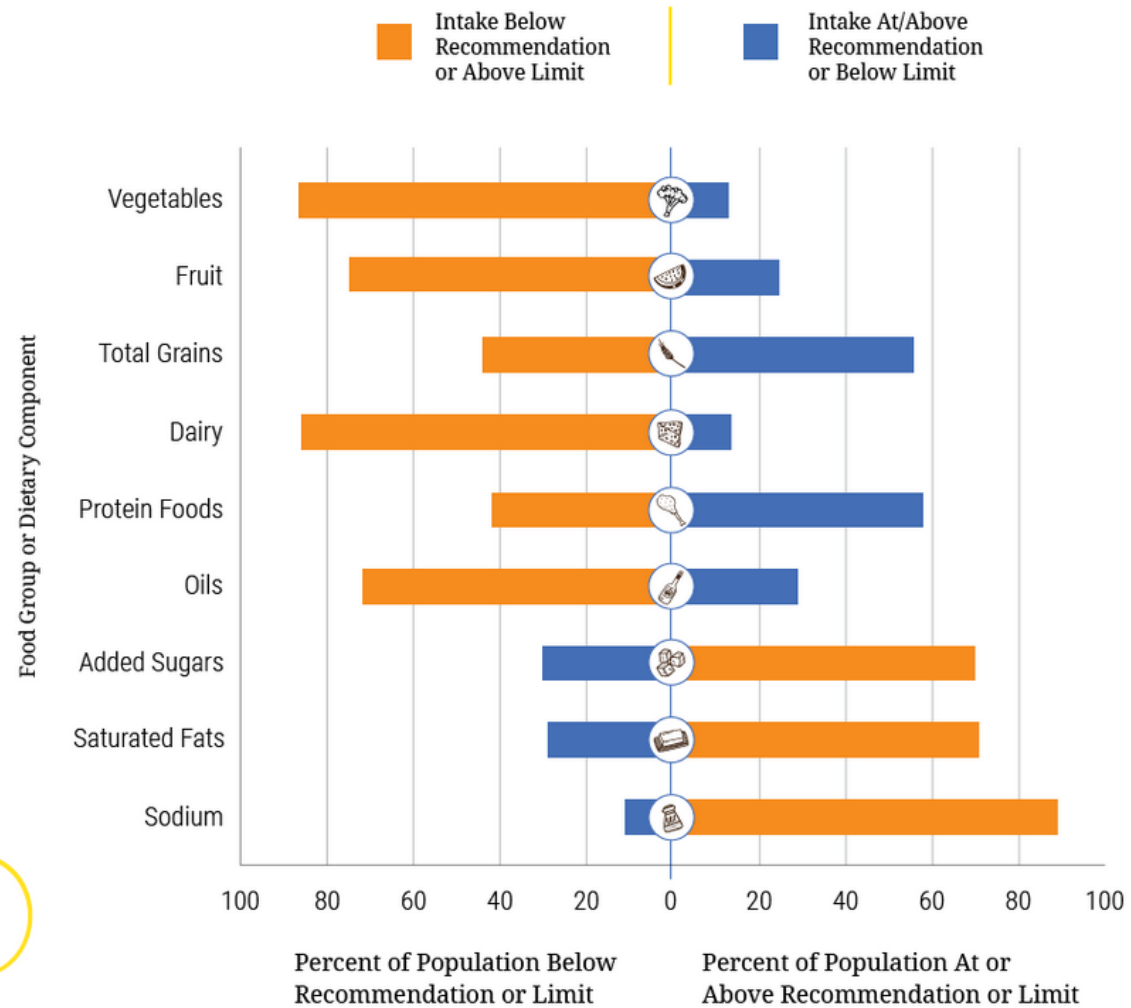
3 cups of dairy

6 ounces of protein broken down as follows:

- 9 ounces per week of seafood
- 28 ounces per week of meats, poultry, eggs
- 5 ounces per week of nuts, seeds, soy

29 grams of oils





What Americans Are Actually Eating

U.S Dietary Guidelines Report, 2015-2020

A collage of various high-calorie foods including a sesame seed bun burger, a basket of french fries, a donut with white icing and chocolate drizzle, several cookies, a small cup of pink sauce, and various candies like M&M's and star-shaped gummies. A glass of dark soda is also visible in the background.

Top Sources of Calories in the U.S.

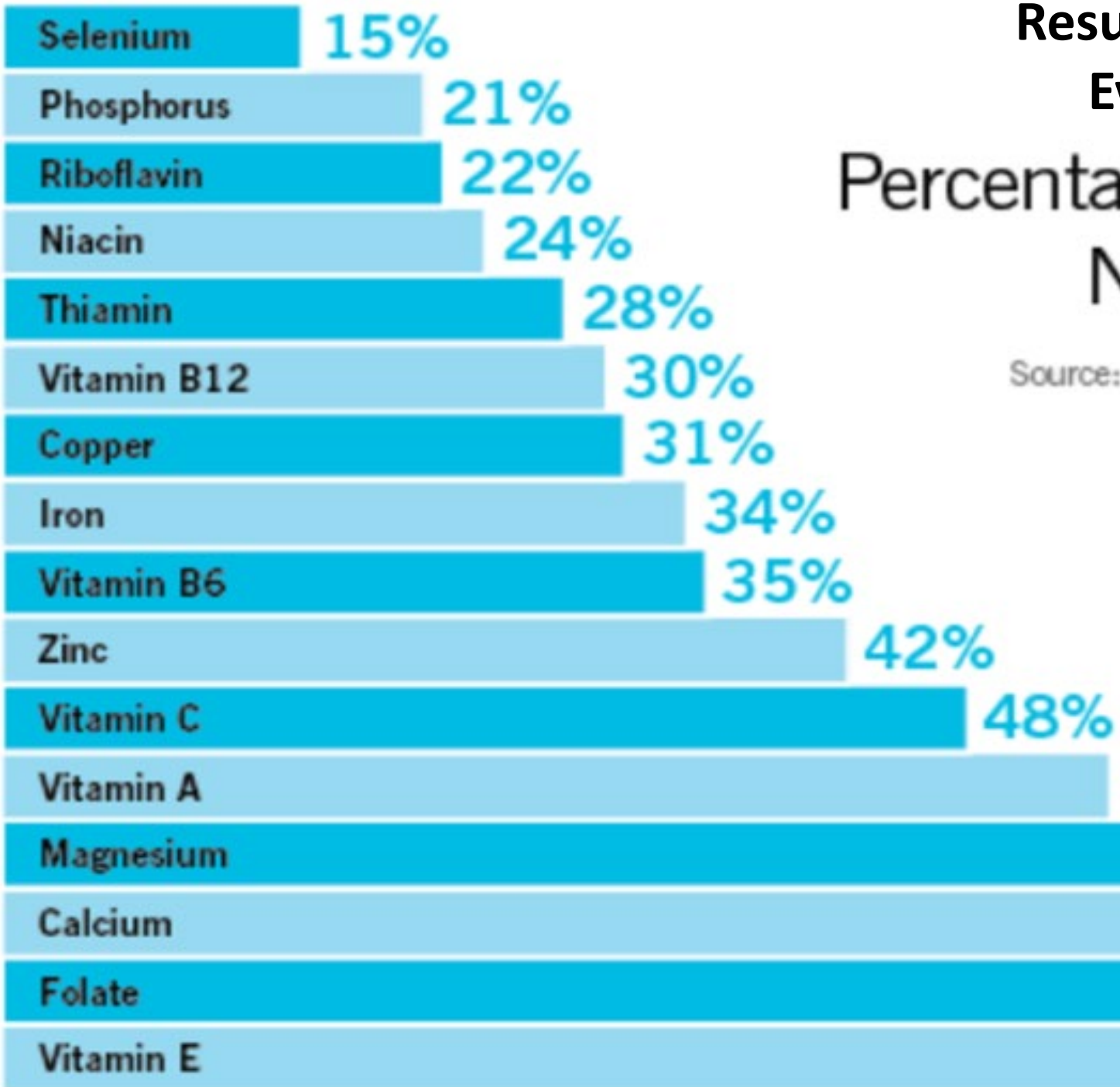
1. Desserts (grain based, i.e. cakes, cookies, donuts, etc.)
2. Bread (made with yeast)
3. Chicken and chicken mixed dishes
4. Soda
5. Pizza
6. Alcoholic beverages

Results From Food Alone **2009**

Everyone has Gaps

Percentage of U.S. Population NOT meeting the RDA

Source: United States Department of Agriculture (2009)



From 2015-2020 Dietary Guidelines:

Troublesome is that many Americans are consistently below the **adequate intake of 9 different nutrients:** potassium, fiber, choline, magnesium, calcium, and vitamins A, D, E, C and D^{12,38}

Takeaway: Food including fortified food is clearly not working^{12,37,38,60,77,108}

Getting worse: UPDATED 2015-2020 DGA Report Because:

Fad Diets (Keto, Gluten, Vegan/Non-Dairy, etc.) & Dieting^{12,38,61,63,74,75,77,108}

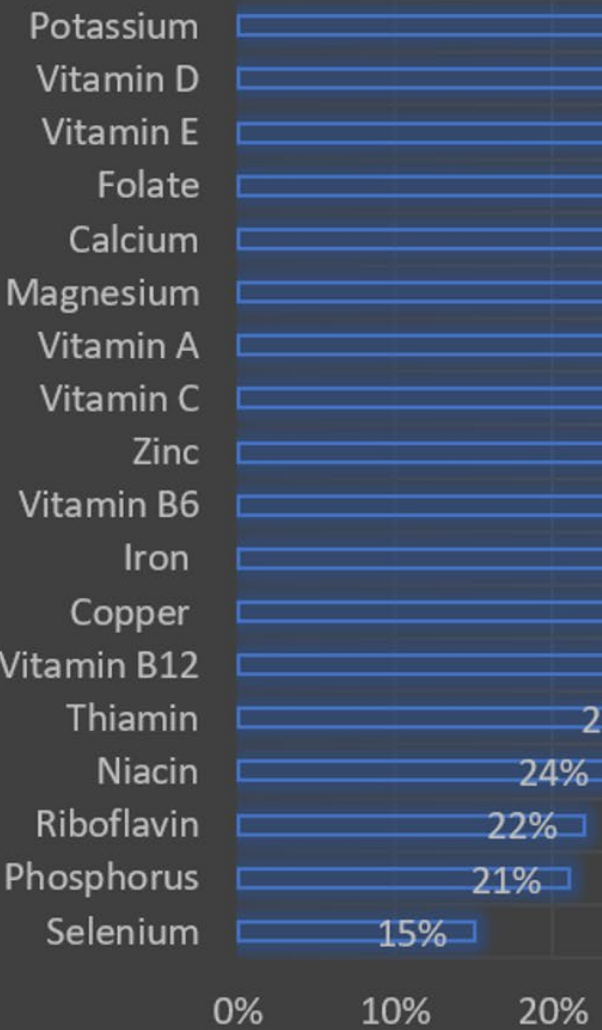
**THE
WHY!!**

AND

Telling people that *humans* can get all the VMs they need from food alone if they eat properly is a fool's errand, particularly in western societies and validated by the fact it hasn't worked

WHAT IF I TOLD YOU

**THE DAY AFTER IT WOULD
ALL BE FORGOTTEN**

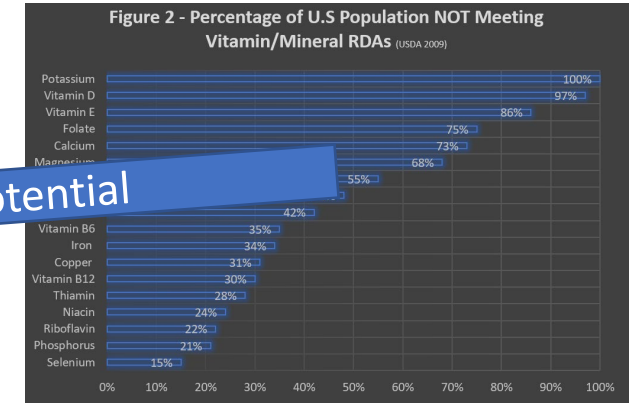
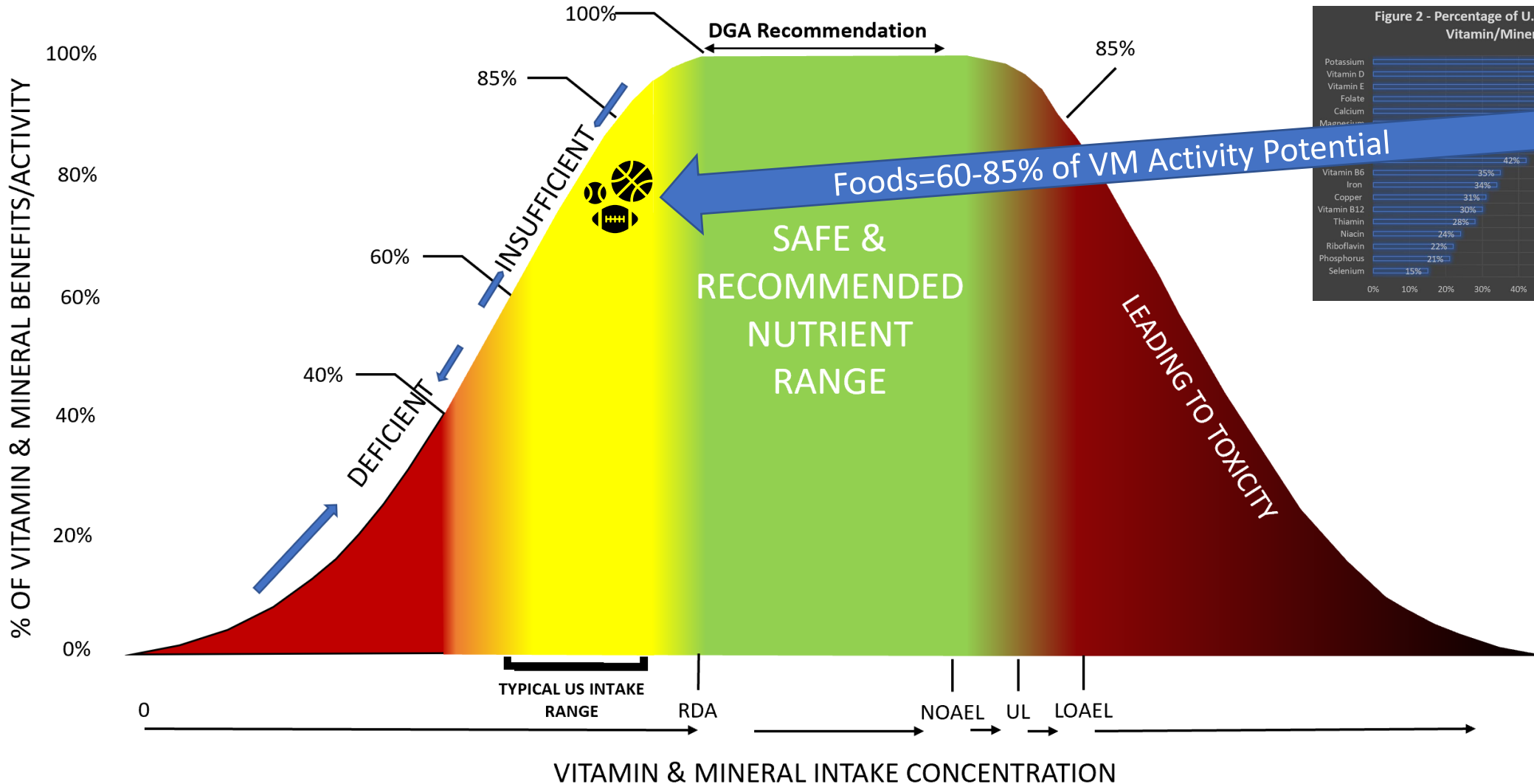


VMs from food is what the body gets - **GAP** - VM RDAs is what it can use to maximize short & long-term health

Diet	Summary/Macronutrient Breakdown	Missing Nutrients		Recommended Supplements
Paleo	NO dairy, grains and grain products, legumes, processed foods, alcohol	Calcium Vitamin D B vitamins	Magnesium Fiber	Multivitamin & Mineral Calcium with Magnesium Vitamin D3
Keto	5-10% Carbs (50 g/d max) 10-20% Protein 70-80% Fat	B vitamins Magnesium Fiber	Vitamin E & C Zinc Iron	Multivitamin & Mineral Calcium with Magnesium Probiotic Essential Amino Acids
Vegan	No animal meats or products (eggs, milk, cheese, yogurt)	Vitamin D Calcium Protein Zinc	Omega-3 Fats B12 Iron Iodine	Vegan MV Calcium with Magnesium Plant Protein
Gluten Free	All forms of wheat and wheat products. Rye, barley, bulgur, some condiments, sauces and dressings	B vitamins Vitamin D Iron Fiber	Zinc Magnesium Calcium Phosphorus	Multivitamin & Mineral Calcium with Magnesium Vitamin D3 Probiotic
Intermittent Fasting	No food restrictions – no eating for a specific time period	Commonly under-consumed nutrients: Potassium, choline, magnesium Vitamins A, D, E, C Calcium, potassium, fiber Iron (for certain age/gender groups)		Multivitamin & Mineral Omega-3 Fish Oils (as needed) Calcium (as needed) Essential Amino Acids Protein
If It Fits Your Macros (IIFYM)	Varies based on individual needs, goals, preferences and training status	Commonly under-consumed nutrients (same as above)		Multivitamin & Mineral Omega-3 Fish Oils (as needed) Calcium (as needed)

Weight Loss Diets & Missing Micronutrients

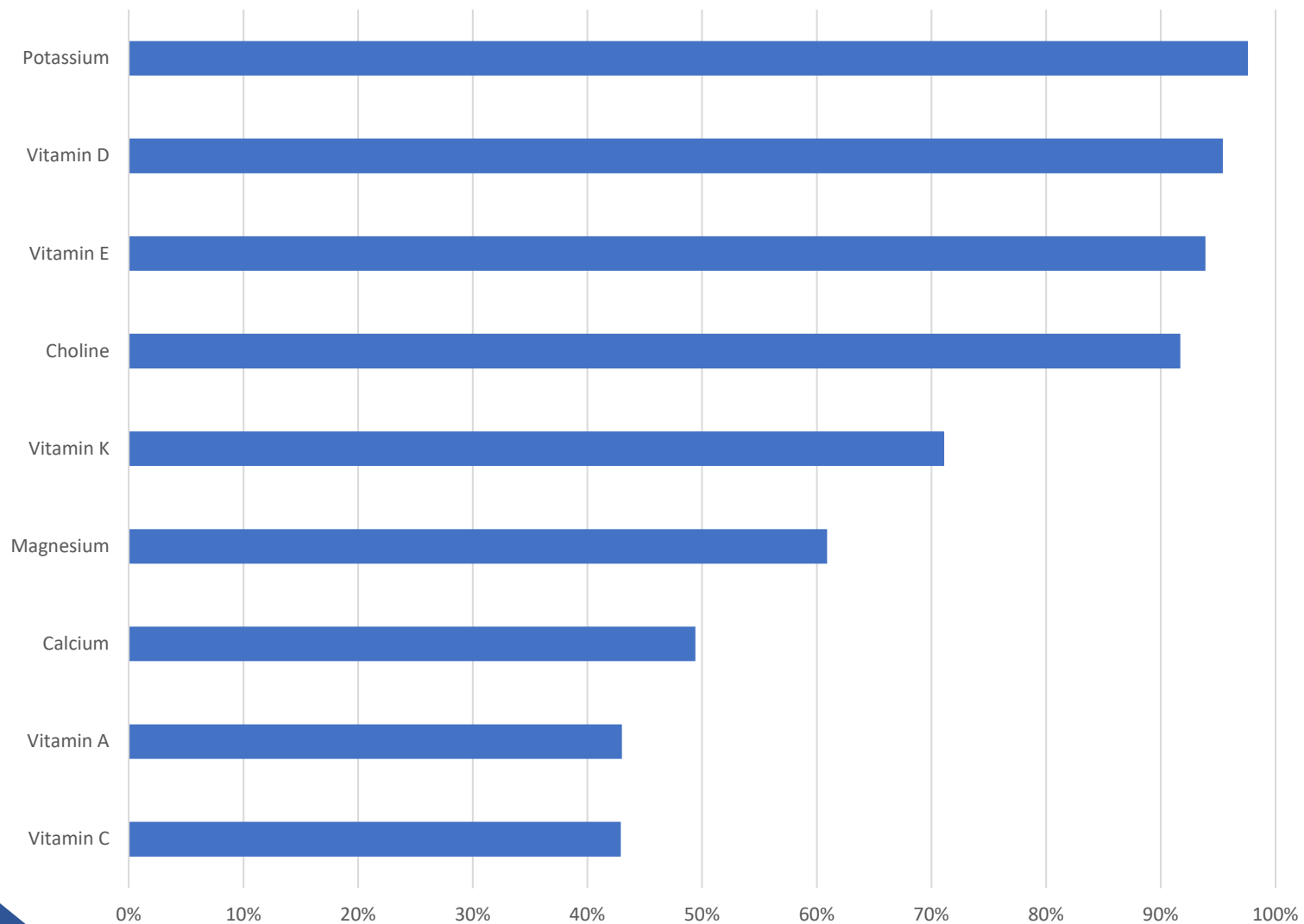
WHY: No one knows if they're near a deficiency & most are in or have been in an **insufficiency:**
Undetectable starting point with an insidious progression that physically manifests as sickness/injury later in life or early aging



VMs from food is what the body gets - **GAP** - VM RDAs is what it can use to maximize short & long-term health

9 Under
Consumed
Vitamins &
Minerals by
U.S. Adults \geq
19 yrs

% of U.S. Adults Below EAR



Consequences of Nutrient Insufficiencies

Calcium

- 99% in skeleton
- 1% tightly maintained in the blood to keep essential functions
 - Muscular contraction and nerve transmission
- ~50% of Adults Below EAR
- Chronic shortages lead to breakdown of bone
 - Undetectable until it's too late

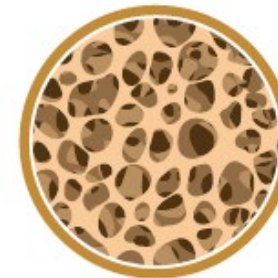
BONES HEALTH OSTEOPOROSIS IS A DISEASE WHERE INCREASED BONE WEAKNESS INCREASES THE RISK OF A BROKEN BONE



HEALTHY BONE

OSTEOPOROSIS




SEVERE OSTEOPOROSIS



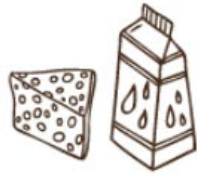
Calcium – Meeting Daily Needs

- Females
 - 14-18 yrs – 1,300 mg/day
 - 19-50 yrs – 1,000 mg/day
 - 51+ yrs – 1,200 mg day
- Males
 - 14-18 yrs – 1,300 mg/day
 - 19-70 yrs – 1,000 mg/day
 - 71+ yrs – 1,200 mg/day
- 3 servings daily of dairy or fortified foods
- 500 mg at a time to maximize absorption

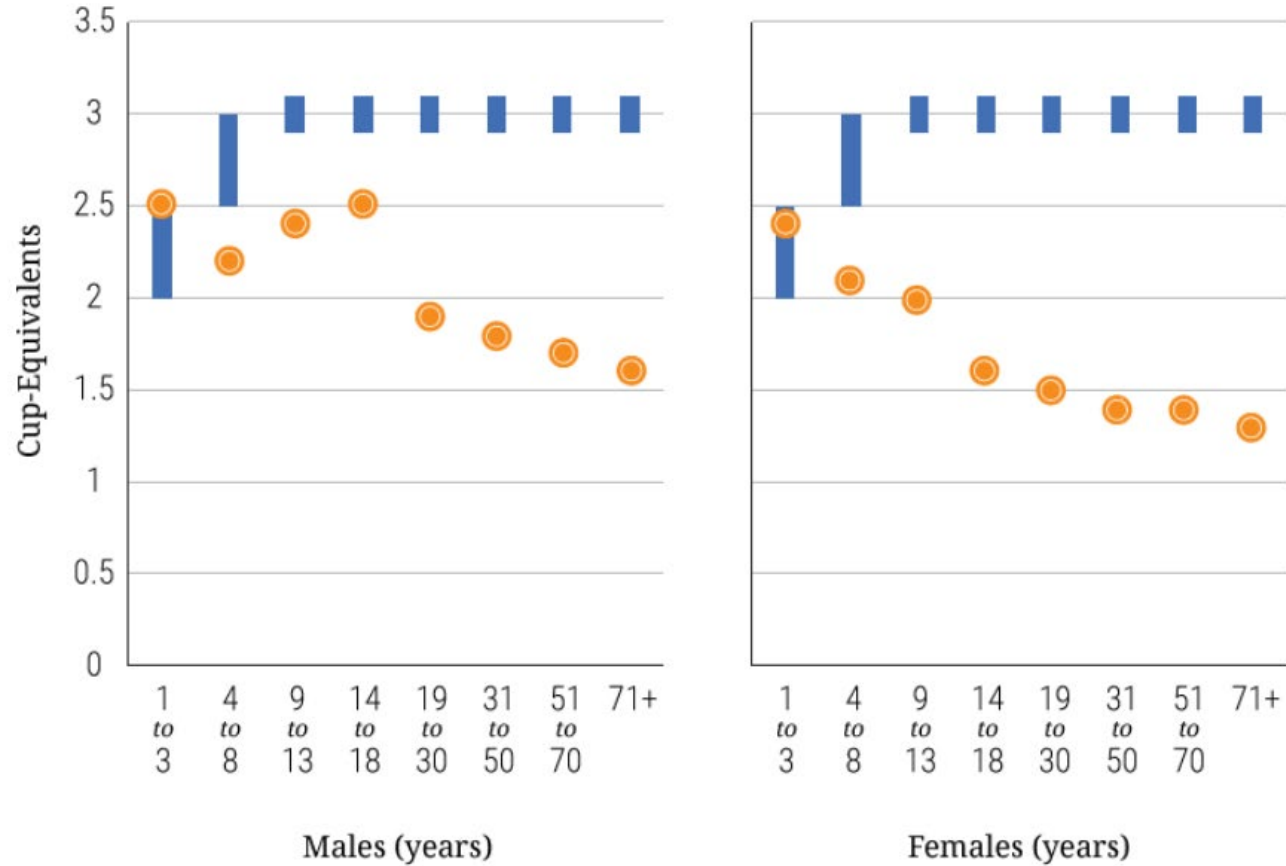
GOOD SOURCES

<p>Dairy</p> <p>yogurt • milk • cheese</p> <ul style="list-style-type: none">• Plain Yogurt, 8 ounces (1 cup), 415 mg 	<p>Sardines</p> <ul style="list-style-type: none">• Sardines (canned), 1 can (3.75 ounces), 351 mg 	<p>Green Leafy Vegetables</p> <p>kale • bok choy</p> <ul style="list-style-type: none">• Collard Greens (cooked), ½ cup, 300 mg 
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mg = milligrams



Dairy



■ Recommended Weekly Intake Ranges

● Average Intake

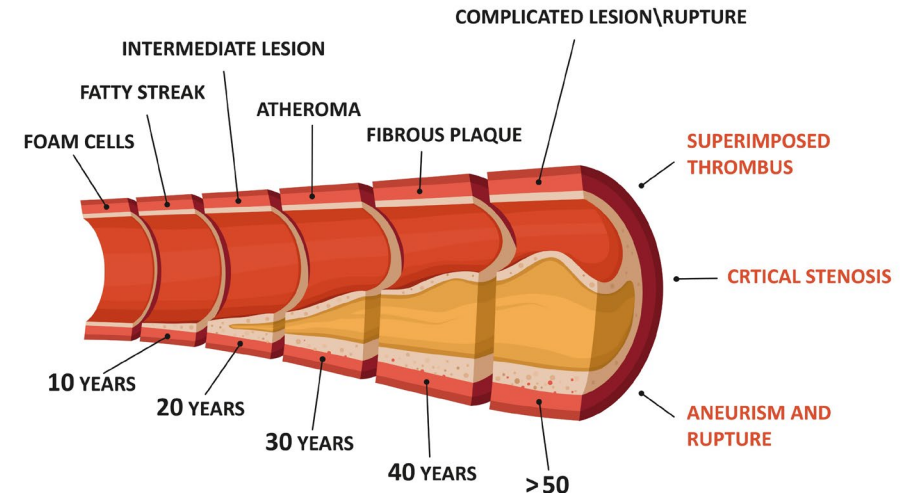
Current
Intakes of
Dairy in the
U.S.

Consequences of Nutrient Insufficiencies

Vitamin K1 and K2

- Needed for survival (short-term functions)
 - Blood clotting
- Also needed for long-term functions
 - Bone calcification (calcium shuttle proteins)
- **>70% of adults fall short**
- Inadequate amounts lead to calcification of blood vessels
 - Undetectable for decades until it's too late

ATHEROSCLEROSIS



Vitamin K – Meeting Daily Needs

Adequate Intakes:

- Females
 - 14-18 yrs – 75 mcg/d
 - 19+ yrs – 90 mcg/d
- Males
 - 14-18 yrs – 75 mcg/d
 - 19+ yrs – 120 mcg/d
- Eat a variety of leafy greens and cruciferous veggies

GOOD SOURCES

There are two forms of naturally occurring vitamin K: vitamin K₁ (phylloquinone) and vitamin K₂ (menaquinones).

Vitamin K₁

green leafy vegetables • plant oils

- Kale (raw, chopped), 1 cup, 472 µg
- Canola Oil, 1 tablespoon, 10 µg



µg = micrograms

Vitamin K₂

gut bacteria • fermented food

- There is no dietary requirement for vitamin K₂ at this time.

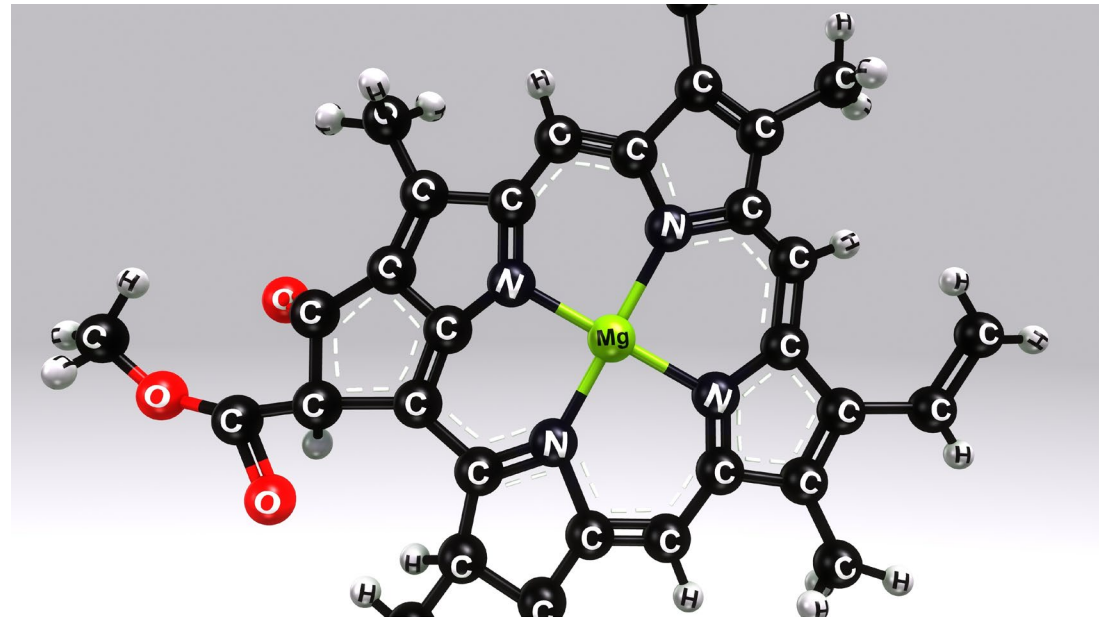
SPECIAL NOTES

- Consume vitamin K with dietary fat to enhance absorption.
- Large quantities of dietary or supplemental vitamin K can interfere with blood clotting medications, such as warfarin.

Consequences of Nutrient Insufficiencies




Magnesium

- Cofactor for 300+ enzymes
- **>60% of adults fall below the EAR**
- Needed for immediate survival
 - Synthesis and utilization of ATP (make energy to run metabolic reactions)
- Needed for long-term health
 - Proteins that repair DNA
 - Inability to repair DNA leads to damaged cells
 - Moderate deficiency associated with certain cancers,



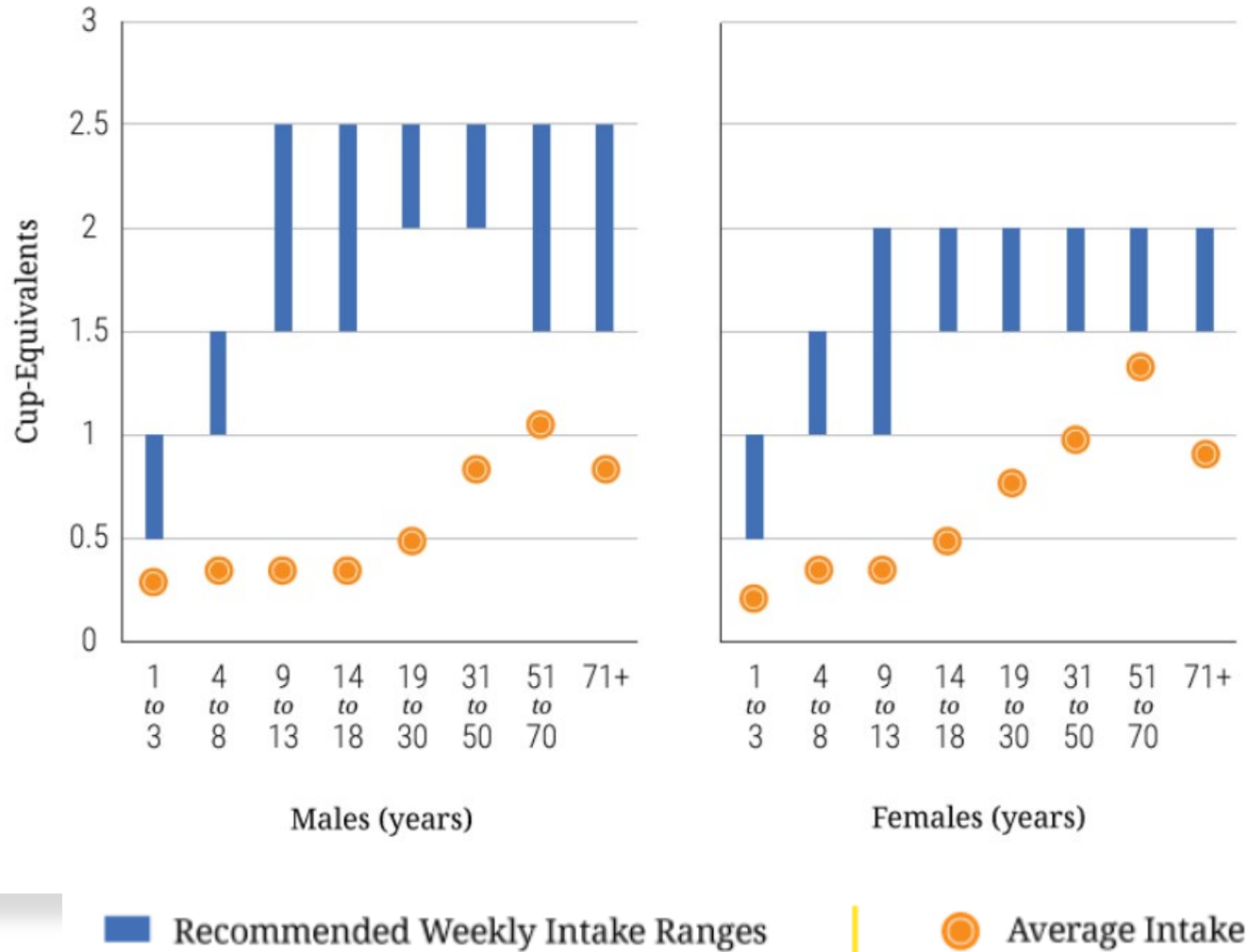
Magnesium – Meeting Daily Needs

- Females
 - 14-18 yrs – 360 mg/d
 - 19-30 yrs – 310 mg/d
 - 31+ yrs – 320 mg/d
- Males
 - 14-18 yrs – 410 mg/d
 - 19-30 yrs – 400 mg/d
 - 31+ yrs – 420 mg/d
- Eat a variety of whole grains, greens, nuts

GOOD SOURCES		
<p><u>Whole Grains</u> wheat • oats • barley</p> <ul style="list-style-type: none">• Brown Rice (cooked), 1 cup, 86 mg 	<p><u>Green Leafy Vegetables</u> Swiss chard • spinach</p> <ul style="list-style-type: none">• Spinach (boiled), 1 cup, 157 mg 	<p><u>Nuts</u> hazelnuts • cashews</p> <ul style="list-style-type: none">• Almonds, 1 ounce (23 almonds), 77 mg 
<p>mg = milligrams</p>		
SPECIAL NOTES		
<ul style="list-style-type: none">• Most people consume too little magnesium.• The Tolerable Upper Intake Level (UL) for magnesium is 350 mg/day from supplements. The UL does not apply to naturally occurring magnesium from food.		



Dark Green Vegetables



Current
Intakes in
the U.S.

Consequences of Nutrient Insufficiencies

Vitamin E (8 tocopherols) fat soluble

- Needed for immune function
- Needed to prevent oxidative damage to cells
- **>90% of Adults Below EAR**
- Evidence of slowing cognitive decline
- Daily Needs for Adults – 15 mg/day
- Include variety of healthy fats – seeds, nuts, plant oils

GOOD SOURCES

Vegetable Oil

- Sunflower Oil, 1 tablespoon, 5.6 mg



Nuts

- hazelnuts • peanuts
- Almonds, 1 ounce (23 almonds), 7.3 mg



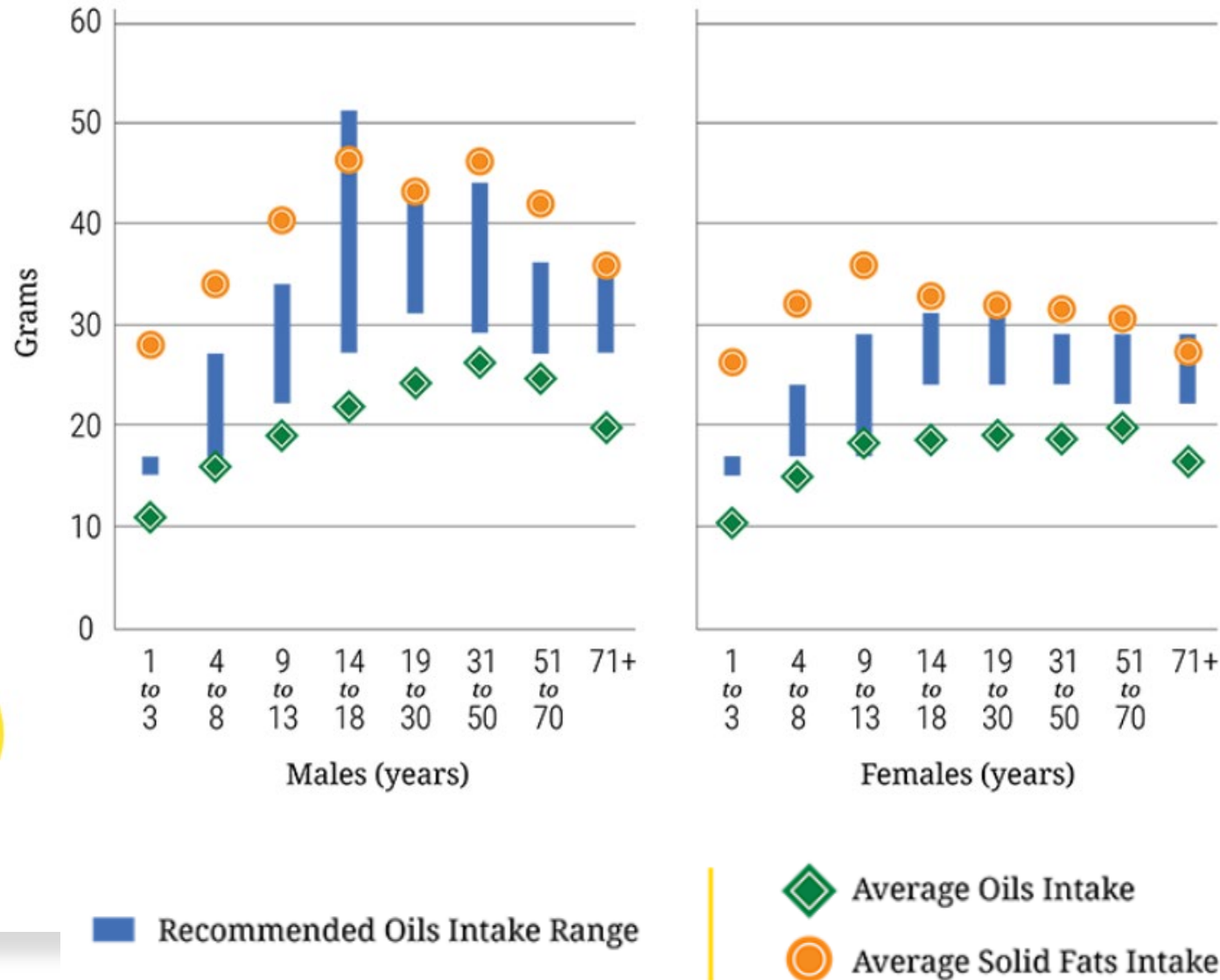
Avocado

- Avocado, 1 medium-sized, 2.7 mg



mg = milligrams

Oils and Solid Fats



Current Intakes in the U.S.

Consequences of Nutrient Insufficiencies

*Nature rations vitamins
and minerals for short
term survival,
reproduction and
propagation of the species
at the expense of long-
term health*



Food for Thought

- 7 out of 10 adults are overweight or obese
- Obesogenic diets are high in calories and low in micronutrients
- Obesity increases risk for all chronic diseases
- If you're helping client lose weight, cutting calories means cutting micronutrients.

CDC's National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP)

CHRONIC DISEASES IN AMERICA

6 IN 10

Adults in the US
have a **chronic**
disease



4 IN 10

Adults in the US
have **two or**
more

THE LEADING CAUSES OF DEATH AND DISABILITY
and Leading Drivers of the Nation's \$3.5 Trillion in Annual Health Care Costs



What is the Purpose of Insurance?

Definitions:

- “A thing providing protection against a possible eventuality”
- “A means of protection”
- “The act, system, or business of insuring property, life, one's person, etc., against loss or harm arising in specified contingencies”

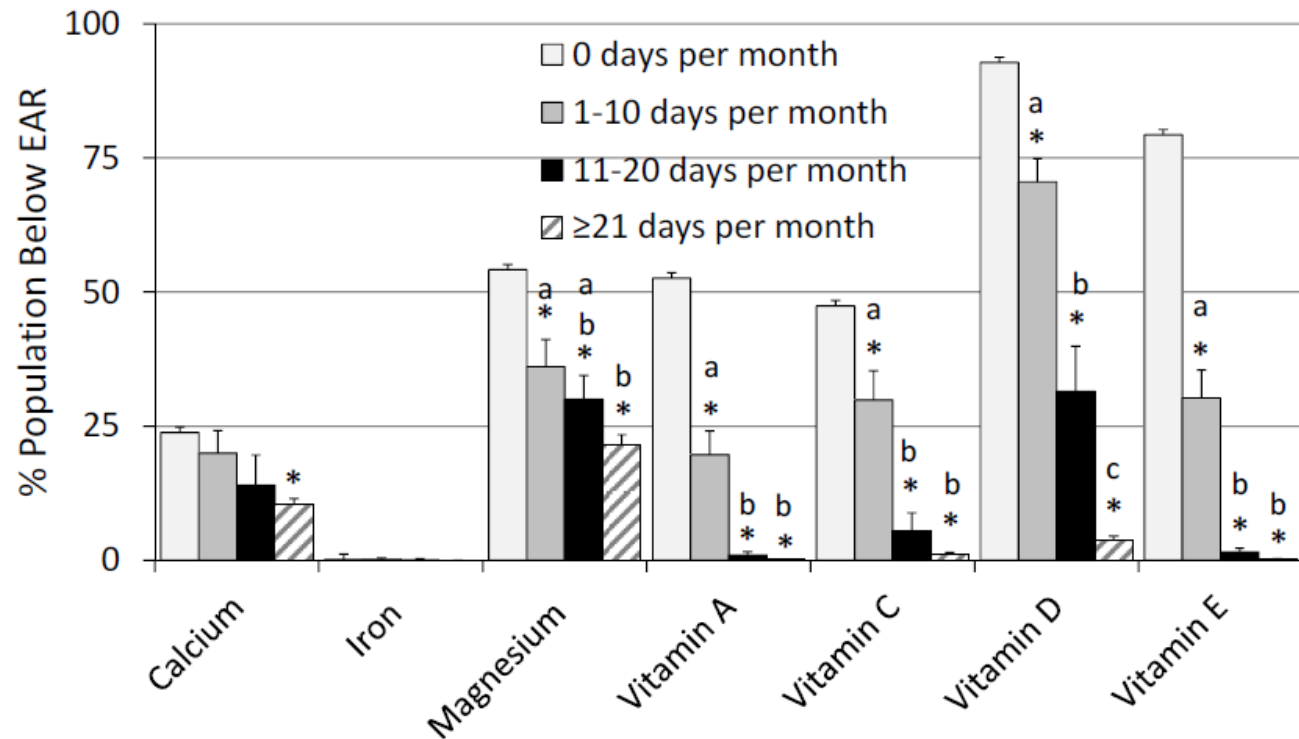
- Which do you have?
 - Health insurance
 - Dental insurance
 - Car insurance
 - Renters insurance
 - Mortgage insurance
 - Life insurance
 - Pet insurance?
 - What about nutritional insurance?

The Birth of the Prenatal Vitamin



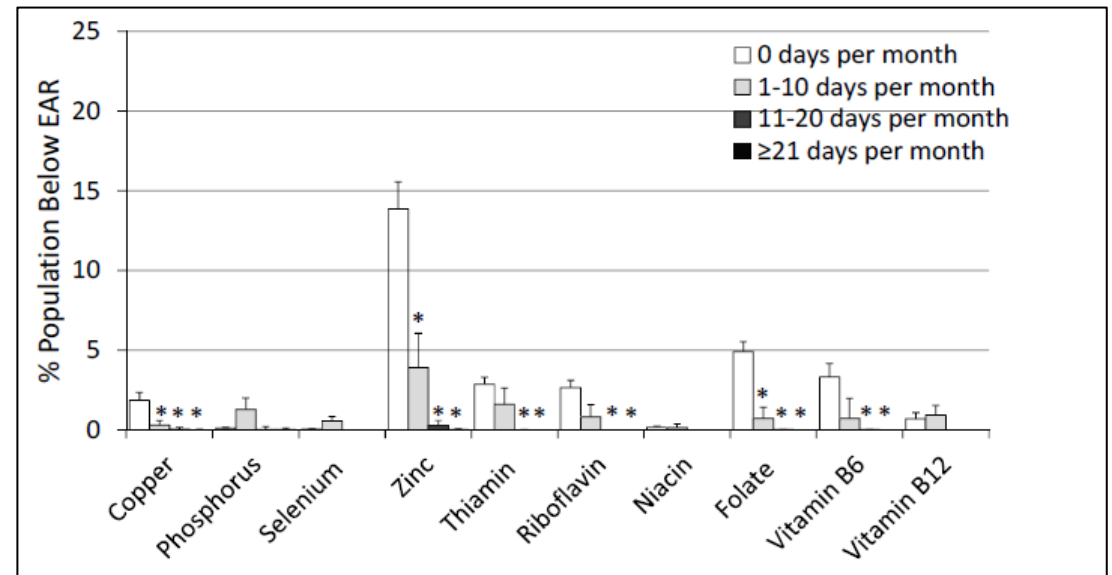
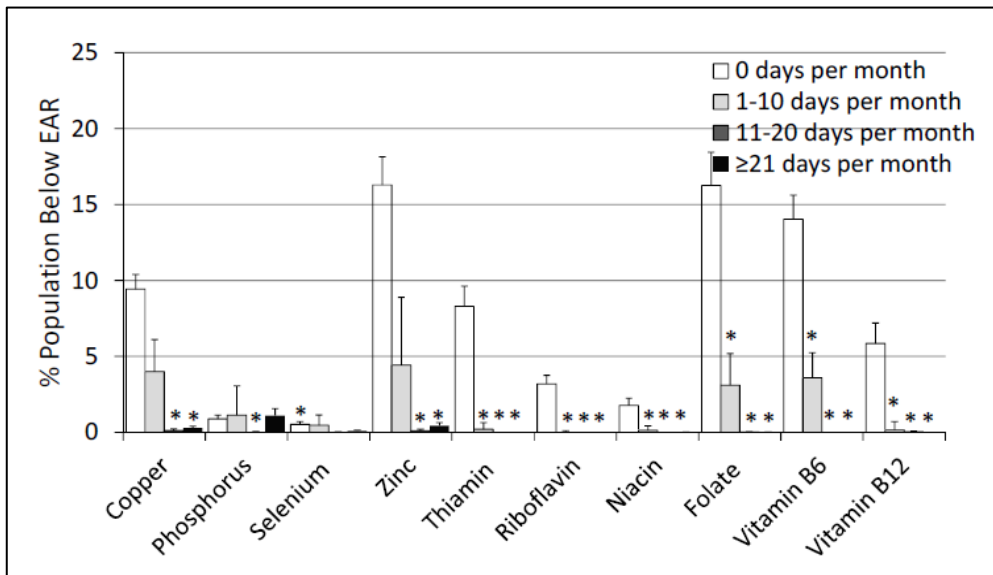
- Folate, vitamin B9 is naturally present in legumes and leafy greens.
 - Unstable
 - Limited bioavailability
- Folic acid, the synthetic form
 - More stable
 - Greater bioavailability and more effective at raising body's level
- Required for DNA synthesis, cell growth and repair
- Multivitamin and mineral formulas with folic acid drastically reduced neural tube defects
 - Worldwide recommendation
 - Folic acid was added to the food supply in 1998.

Multivitamin & Mineral Supplements – Research Look



- People who use multivitamin and mineral supplements more frequently have fewer micronutrient insufficiencies and/or higher micronutrient intakes.
- Compared to food alone, taking a multivitamin and mineral was associated with a lower prevalence of inadequacies for 15 of 17 micronutrients examined

Multivitamin & Mineral Supplements – Research Look



Prevalence of Micronutrient Inadequacies in Females and Males Based on Food Alone and Frequency of Multivitamin and Mineral Supplements



Multivitamin and Mineral Supplements (MVMS)

Consensus Among 14 International Experts

- MVMS can broadly improve micronutrient intakes when they contain at least those that are consumed insufficiently or have limited bioavailability within a population
- MVMS formulation may be individualized according to age, sex, life cycle and/or other selected characteristics (activity level)
- Adequate intakes are necessary for normal biological functioning required for good health; in some instances, higher than recommended micronutrient intakes have the potential to provide additional health benefits
- Long term use of MVMS not exceeding the Upper Limit of recommended intakes has been determined to be safe in healthy adults

“I believe that you can, by taking some simple and inexpensive measures, lead a longer life and extend your years of well-being. My most important recommendation is that you take vitamins every day in optimum amounts to supplement the vitamins that you receive in your food.”

-Linus Pauling

”

Building the Perfect MVM – i.e. Practitioner Product vs Mass Channels

1-Active MV

Serving Size: 1 Tablet		Servings Per Container: 60	
Amount Per Serving	Amount Per Serving	%DV*	
Vitamin A (as Beta Carotene and Palmitate)	4,500 IU	90%	
Vitamin C (as Ascorbic Acid and Calcium Ascorbate)	450 mg	750%	
Vitamin D-3 (as Cholecalciferol)	600 IU	150%	
Vitamin E (as DL-alpha Tocopheryl Succinate)	150 IU	500%	
Vitamin K (as Phytanadione K1 and Menaquinone K2)	50 mcg	63%	
Vitamin B1 (as Thiamine Mononitrate)	5 mg	333%	
Vitamin B2 (as Riboflavin-5 Phosphate)	2.5 mg	147%	
Vitamin B3 (as Nicotinamide)	15 mg	75%	
Vitamin B6 (as Pyridoxal 5-phosphate)	3 mg	150%	

Micronutrient	Mean Daily Intake (Food +Fortification) ⁹	RDAs #AIs	ULs	LOAEL (L) NOAEL (N)	Mean Food-RDA Gap	Mean Food-UL Gap	Supplement Low-High range ¹	%<RDA %<AI [#] %<EAR ⁺
Preformed Vitamin A (PVA) ² 1 IU retinol = 0.3 µg Retinol activity equivalent (RAE) 1µg=3.33 IU	621µg RAE	700-900µg RAE	3000µg	L-14,000 µg N-3,000µg	200µgRAE	2,350µg	500-1000µg PVA*	55 %<RDA *43
*β-carotene a Vitamin A substitute/ad	<2mg (4.5-6 mg =900 µg Retinol)	1IU from food=.05µg Retinol; 2IU supps=.15µg	N/A	N/A	N/A	N/A	1500IU-2500IU	N/A
Vitamin D 1µg=40IU	4.9µg	15-20µg	100µg	N-250µg ⁴	10-15µg	90µg	20-40µg	97 %<RDA *94
Vitamin E (α-tocopherol)	7.4mg	15mg	1000mg ⁵	L-500mg/kg	7-8mg	990mg	10-250mg	86 %<RDA *86

¹ Low based on most anyone achieving RDAs; highs covering sub-populations variant nutrient metabolism (e.g. bioavailability or functional availability differences, etc. age resistance and/or strong evidence

Micronutrient	Mean Daily Intake (Food +Fortification) ⁹	RDAs #AIs	ULs	LOAEL (L) NOAEL (N)	Mean Food-RDA Gap	Mean Food-UL Gap	Supplement Low-High range ¹	%<RDA %<AI [#] %<EAR ⁺
Vitamin D 1µg=40IU	4.9µg	15-20µg	100µg	N-250µg ⁴	10-15µg	90µg	20-40µg	97 %<RDA *94

Super Calcium Synergistic

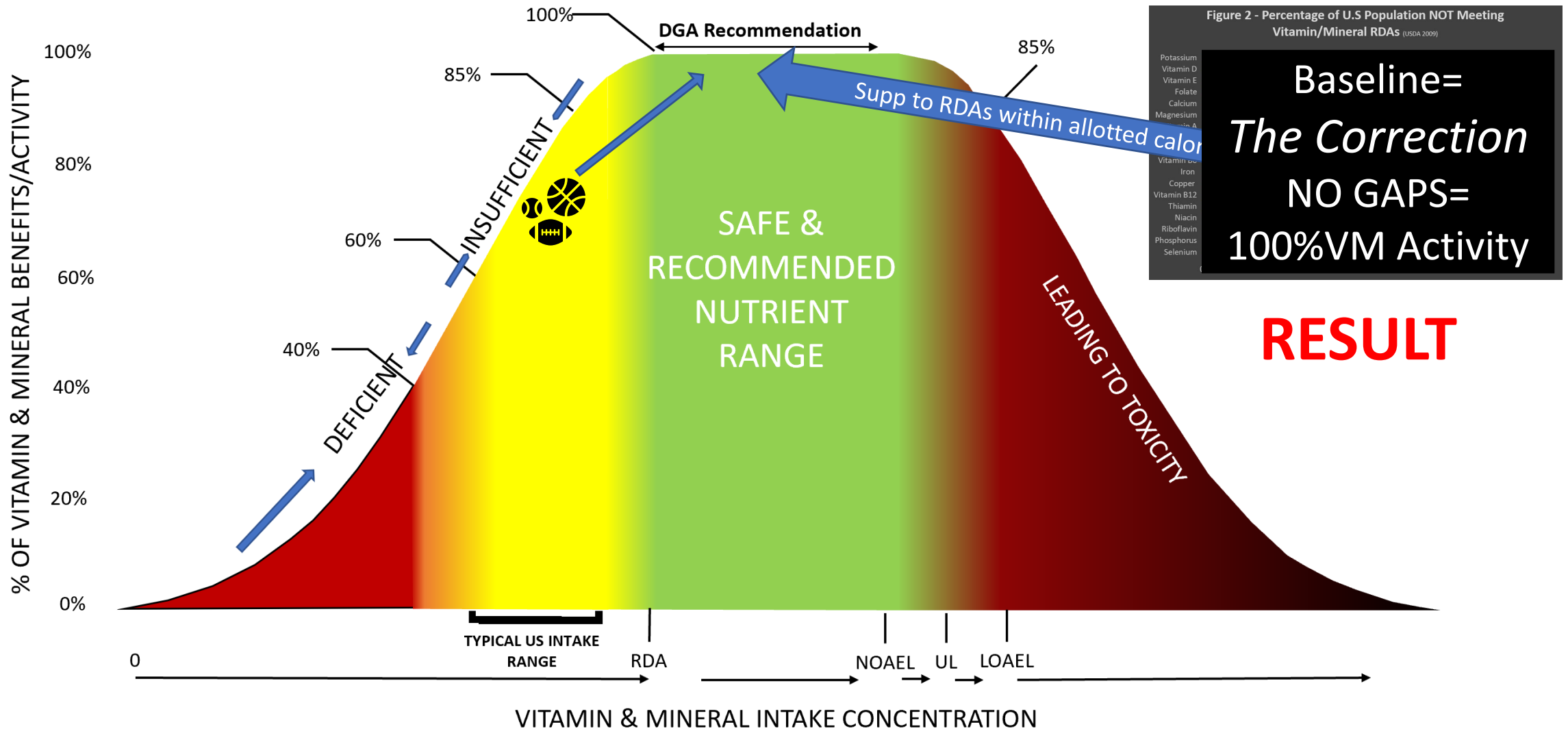


Serving Size: 1-2 Tablets		Servings Per Container: 60 to 120		
	Amount 1 tablet	% DV	Amount 2 tablets	% DV
Vitamin D (as Cholecalciferol)	200 IU	50%	400IU	100%
Vitamin K (as phytanadione K1 and menaquinone K2)	30 mcg	38%	60 mcg	75%
Calcium (as carbonate)	500mg	50%	1,000 mg	100%
Magnesium (as oxide and citrate)	125 mg	32%	250 mg	63%
Boron (as Sodium Borate)	1 mg	**	2 mg	**

Biotin								
Folate	542µg	400µg	1000µg ⁵	L-5000µg	0	500µg	200-400µg ⁵ (not incl. pregnancy)	75 %<RDA *9-15
Vitamin B12	5.3µg	2.4µg	ND	ND	0	N/A	2-30µg	30 %<RDA *2-4
Choline	275-400mg (~315mg)	#425-550mg	3500mg	L-7500mg	100-250mg	3000mg	250-450mg	*92 %<RDA *N/A
Vitamin C	70-84mg	75-90mg	2000mg	L-3000mg	10-20mg	1900mg	100-1000mg	48 %<RDA *40
Calcium	850mg	1000-1200mg	2000-2500mg	L-5000mg	150-350mg	1150mg	0-1000 ⁷	73 %<RDA *49
Chromium	23-50µg	#25-30µg	ND	ND	5µg	N/A	50-100µg	ND
Copper	1.0-1.6mg	900µg	10mg	N-10mg	0	8.5mg	.5-1gm	31 %<RDA *4.5
Fluoride	N/D	#3-4mg	10mg	N-10mg	N/A	N/A	Fortification only	N/A
Iodine	138-353µg	150µg	1100µg	L-1700µg	0-20µg	7-800µg	25-100µg	ND
Iron	10-16mg	8-18mg	45mg	L-70mg	0-8mg	30mg	5-15mg	34 %<RDA *8
Magnesium	280mg	320-420mg	350mg ⁵	L-360 ⁵	5-250mg	N/A ⁵	200-300mg	68 %<RDA *52
Molybdenum ⁶	N/A	45µg	2mg	N-900µg	N/A	N/A	N/A	N/A
Manganese ⁶	1.8-2.3mg	#1.8-2.3mg	11mg	N-11mg	0	0	N/A	N/A
Phosphorus	1350mg	700mg	3-4gm	N-10.2gm	0	8gm	0-200mg	21 %<RDA

Note: >17yrs, size & activity only significant consideration

GOAL=CORRECT FOOD VM CONTENT TO ACHIEVE RDAs



The Function of Lifelong Inexpensive Low Dose COMPLETE MVM (~20VMs) is to Offer the Potential for all VM Dependent Systems to Operate at Full Capacity in the Creation, Maintenance of Human Structure, Function, Health & Recovery



Strategies to Maximize Micronutrient Intake

- Nothing replaces a healthy diet.
- Consume a wide variety of minimally processed foods from all food groups within your calorie needs.
- Add nutritional insurance to fill common nutrient gaps “just in case.”

The dotFIT Difference



All products are 3rd party tested.

Forms and dosages match research.

Research reviews are published on our website.

Synergistic with other health products to prevent excessive intakes.

Part of a complete program with nutrition plan, exercise & coaching/accountability.



Infographics



Social Media

Trainer Resources

Infographics – www.dotFIT.com/dotfittools

**Thank
You!**



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