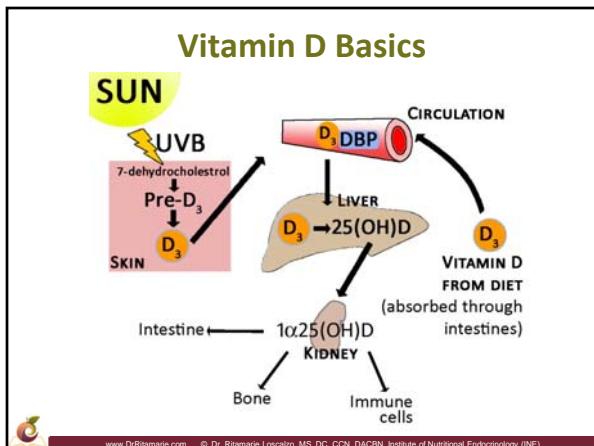
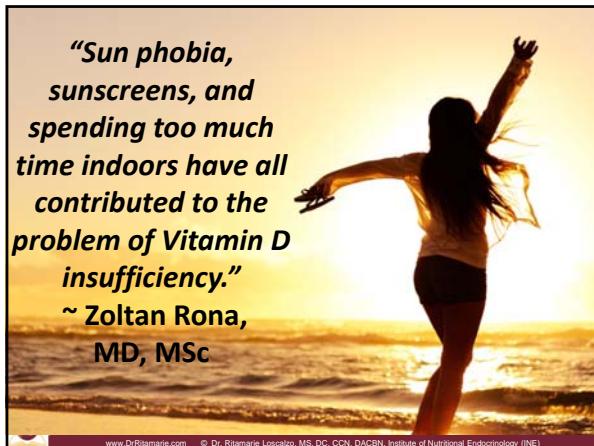


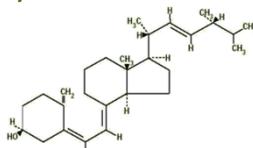
**Medical Disclaimer:** The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, [drritamarie.com](http://drritamarie.com), and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.





## Functions of Vitamin D - Part 1

- ✓ Helps **gut absorb calcium** and phosphorus
- ✓ Regulate **calcium and phosphorus** metabolism
- ✓ **Adrenal** gland health
- ✓ **Blood sugar** control
- ✓ **Bone** metabolism
- ✓ **Brain** and nervous system development and function
- ✓ **Digestion** and nutrient absorption
- ✓ **Blood brain barrier** permeability
- ✓ **Gut** membrane permeability



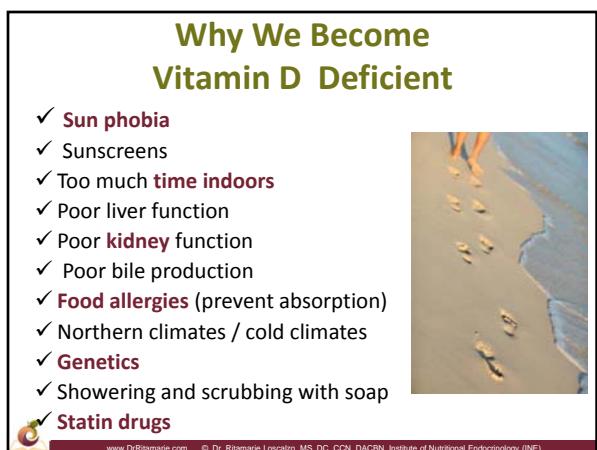
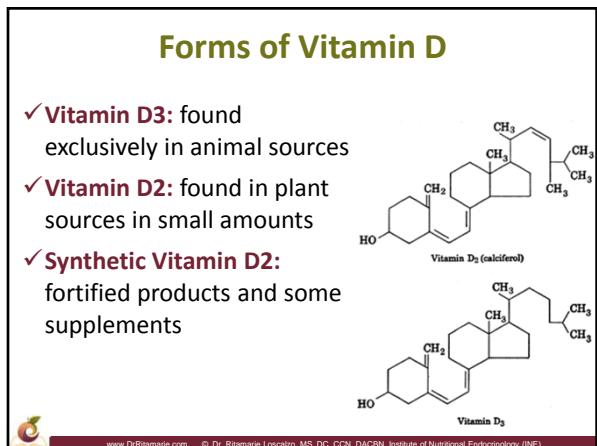
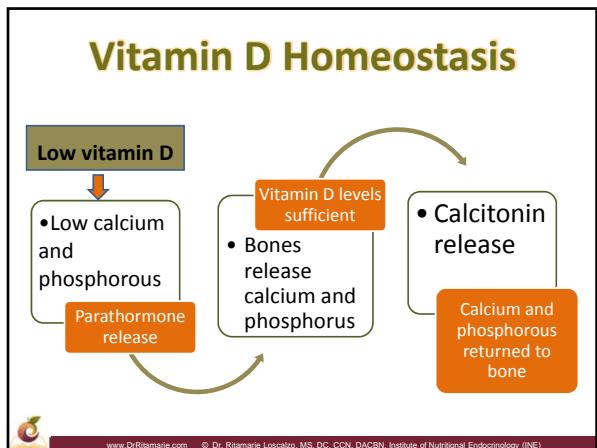
 **Gut** membrane permeability

## Functions of Vitamin D - Part 2

- ✓ Immune system health
- ✓ Mood, mind, memory and behavior
- ✓ Muscle, nerve and athletic performance
- ✓ Normal blood pressure
- ✓ Pancreatic health
- ✓ Skin health
- ✓ Sleep
- ✓ Vision
- ✓ Weight control
  - carbohydrate and fat metabolism



– carbohydrate and fat metabolism



**Vitamin D Deficiency**

**Consequences:**

- Psychiatric**
  - Schizophrenia
  - Depression
- Infection**
  - Urinary
  - Tuberculosis
- Circulatory**
  - High blood pressure
  - Coronary heart disease
- Cancer**
  - Colon
  - Prostate
  - Other
- Other**
  - Diabetes
  - Syndrome X
  - Obesity
- Pulmonary**
  - Wheezing
  - FEV1
- Bone & Muscle**
  - Osteoporosis
  - Osteomalacia
  - Osteoarthritis
  - Rickets
  - Muscle aches & weakness

**External Factors:**

- Sunscreen
- Melanin
- Latitude
- Winter

**Medications & Supplements:**

- Antiseizure
- Glucocorticoids
- Rifampin
- HAART
- St. John's Wort
- Malabsorption
- Crohn
- Whipple
- Cystic fibrosis
- Cellac
- Organ failure
  - Liver disease
  - Renal failure
  - Nephrotic syndrome

**Vitamin D Testing**

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# Vitamin D Deficiency Can Result In

- ✓ Over-weight
- ✓ High blood pressure
- ✓ Osteoporosis and osteopenia
- ✓ Autism
- ✓ Autoimmune conditions
- ✓ Cancer
- ✓ Depression
- ✓ Asthma
- ✓ Migraines
- ✓ Cystic fibrosis
- ✓ Diabetes (types: 1 and 2)
- ✓ Multiple sclerosis
- ✓ Schizophrenia
- ✓ Epilepsy
- ✓ Osteoarthritis PCOS (Polycystic Ovarian Syndrome)
- ✓ Musculoskeletal pain, including joint pain and low back pain
- ✓ Muscle weakness
- ✓ Poor balance
- ✓ Systemic inflammation
- ✓ Fibromyalgia



<b>Blood Levels of Vitamin D (US Measurements)</b>	
<b>&gt;100 ng/mL</b>	Excessive vitamin D
<b>50–70 ng/mL</b>	Proposed optimal range
<b>30–50 ng/mL</b>	Suboptimal
<b>&lt;30 ng/mL</b>	Deficient
<b>&lt;20 ng/mL</b>	Overt vitamin D deficiency
<b>&lt;10 ng/mL</b>	Seriously deficient

# INE: Micronutrients - Vitamins: Vitamin D

## Vitamin D Deficiency Statistics

- ✓ 41% of people studied had vit. D level below 20
- ✓ 82.1% of African Americans had vit. D level below 20
- ✓ 69.2% of Hispanics had vit. D level below 20

*Nutr Res. 2011 Jan;31(1):48-54. doi: 10.1016/j.nutres.2010.12.001. Prevalence and correlates of vitamin D deficiency in US adults. Forrest KY<sup>1</sup>, Stuhldreher WL.*

- ✓ 1988-1994, 45% of people studied had vit. D level greater than 30
- ✓ 2001-2004, 23% of people studied had vit. D level greater than 30

*Demographic Differences and Trends of Vitamin D Insufficiency in the US Population, 1988-2004.*  
Adit A. Ginde, MD, MPH; Mark C. Liu, MD; Carlos A. Camargo Jr, MD, DPH. *Arch Intern Med.* 2009;169(6):626-632.



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## Cancer and Sun Exposure

- **Melanoma:** Most dangerous cancer of skin is not related to sun exposure; recent studies suggest it can be caused by vitamin D and omega-3 deficiency
- **Basal cell carcinoma** is benign
- **Sunscreens** are carcinogenic
- Get out of the sun when your skin starts to turn a little pink
- **Natural sunblocks** if necessary: zinc oxide, titanium dioxide

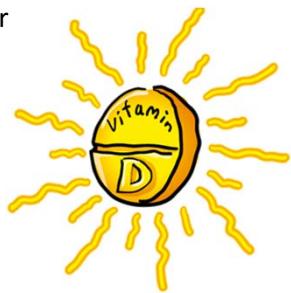


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## Those at Highest Risk of Vitamin D Deficiency

- Overweight:** greater need – stored in fat
- Pregnant women**
- Elderly:** skin loses ability to produce
- Dark skinned:** melanin blocks UVB rays



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## Vitamin D Testing

- ✓ Get a baseline test
- ✓ Supplement if indicated
- ✓ Retest every 3 months until stable, for at least a year
- ✓ Be sure to test in winter and summer

A woman with her eyes closed, basking in the sun, symbolizing Vitamin D supplementation.

# Conditions That Benefit From Large Doses of Vitamin D

- ✓ Cancer
- ✓ ALS
- ✓ Depression
- ✓ Hashimotos
- ✓ Multiple sclerosis
- ✓ Allergies
- ✓ Flu
- ✓ Rheumatoid arthritis
- ✓ Heart disease
- ✓ Lung disease
- ✓ Osteoporosis



## Subset of Conditions That Respond To Vitamin D Supplementation - 1

- ✓ **The flu:** Cambridge Journals showed that vitamin D reduces the incidence of respiratory infections in children
- ✓ **Muscle weakness:** Michael F. Holick: Muscle weakness is usually caused by vitamin D deficiency because for skeletal muscles to function properly, their vitamin D receptors must be sustained by vitamin D
- ✓ **Psoriasis:** In a study published by the UK PubMed central, it was discovered that synthetic vitamin D analogues were found useful in the treatment of psoriasis.



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## Subset of Conditions That Respond To Vitamin D Supplementation - 2

- ✓ **Chronic kidney disease:** Patients with advanced chronic kidney diseases unable to make the active form of vitamin D
- ✓ **Diabetes:** 10,366 children were given 2,000 international units (IU)/day of vitamin D3 per day during their first day of life then monitored for 31 years; risk of type 1 diabetes was reduced by 80 percent ([Lancet.com](https://www.lancet.com))
- ✓ **Asthma:** Asthma attacks in school children in Japan were significantly lowered in those subjects taking a daily vitamin D supplement of 1,200 IU a day



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## Subset of Conditions That Respond To Vitamin D Supplementation - 3

- ✓ **Periodontal disease:** Raising their vitamin D levels increases defensins and cathelicidin and lower the number of bacteria in the mouth
- ✓ **Cardiovascular disease:** *Harvard University* - nurses study - women with low vitamin D levels had a 67% increased risk of hypertension
- ✓ **Schizophrenia and depression:** Vitamin D prenatal and during childhood - vitamin D receptor in the brain integral for brain development and mental function maintenance in later life



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## Subset of Conditions That Respond To Vitamin D Supplementation - 4

**Cancer: Georgetown University Medical Center**  
presented at the *American Association for Cancer Research* - increased doses of vitamin D linked to  
a **75 percent reduction in overall cancer growth**  
and **50 percent reduction**

**in tumor** among those already having the disease, especially estrogen-sensitive breast cancer



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## High Dose Vitamin D Supplementation

- ✓ John Cannelli, head of vitamin D council, recommends **50,000 – 100,000 iu daily for cold or flu**
- ✓ Dr. Mercola recommended **90% of body weight during swine flu outbreak**
- ✓ Norm Shealy, MD takes **50,000 iu daily** – has for 18 months
- ✓ **Do not take calcium with such high doses**
- ✓ In 1930s and 1940s doctors at Johns Hopkins prescribed **600,000 iu to treat arthritis** and only 10 patients developed toxicity symptoms after 2 – 18 months



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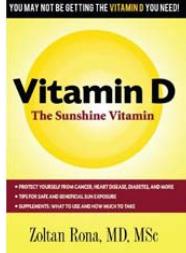
## Vitamin D Toxicity Symptoms

- ✓ Weight loss and fatigue – first
- ✓ Anorexia
- ✓ Nausea
- ✓ Vomiting
- ✓ High blood calcium
- ✓ Kidney damage
- ✓ Only deaths reported were when steroids prescribed with the Vitamin D



## Treatment for Vitamin D Toxicity

- ✓ Discontinue supplements
- ✓ Stay out of sun
- ✓ Drink at least **4 liters of water per day**
- ✓ **Symptoms resolve in several weeks**, calcium level normalizes in several months





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## Vitamin D in Foods

Food	Serving Size	Calories	Amount of Vitamin D
Cod Liver Oil	1Tbs	120	1360
Salmon	4 oz	158	511
Sardines	3.2 oz	189	175
Tuna	4 oz	147	93
Egg	1	77	43
Shiitake Mushrooms	½ cup	41	20

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## Supplementation Guidelines

- ✓ Vitamin K2
- ✓ Vitamin A
- ✓ Research drug interactions
- ✓ Limit or avoid calcium supplements with high dose vitamin D



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## INE: Micronutrients - Vitamins: Vitamin D

## Resources/References - 1

- ✓ <http://www.drritamarie.com/go/TrendsVitDinsufficiency>
- ✓ <http://www.drritamarie.com/go/VHProductsVitD>
- ✓ Vitamin D the Sunshine Vitamin, Zoltan Rona, MD  
<http://www.drritamarie.com/go/VitDsunshineVitaminRona>
- ✓ <http://www.drritamarie.com/go/DrRitamarieVitaminDVideo>
- ✓ <http://www.drritamarie.com/go/DrRitamarieSunlightDFense>
- ✓ <http://www.drritamarie.com/go/10SymptomsVitDdeficiency>
- ✓ Mercola.com “Daily Sunlight Can Keep Cancer Away”  
<http://www.drritamarie.com/go/DailySunlightCancer>
- ✓ Mercola.com “Lack of Sunshine Causes One Million Deaths a Year”  
<http://www.drritamarie.com/go/LackOfSunshineDeaths>
- ✓ Mercola.com “How Much Vitamin D Do You Need?”  
<http://www.drritamarie.com/go/HowMuchVitD>



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## Resources/References - 2

- ✓ Video by Dr. Joe Mercola: 1 hour video with lots of details about vitamin D
- ✓ *Annals of Epidemiology*, April 14, 2009, Dr. Cedric Garland
- ✓ *Annals of Epidemiology*, July 2009, Volume 19, Issue 7, Pages 468-483
- ✓ *Science Daily*, "New Model of Cancer Development: Low Vitamin D Levels May Have Role" May 26, 2009
- ✓ *The Journal of Steroid Biochemistry and Molecular Biology*, March 2007; 103(3-5):708-11
- ✓ *American Journal of Clinical Nutrition*, June 2007; 85(6):1586-91.
- ✓ *American Journal of Epidemiology*, October 12, 2007



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