

In The Name of God

**Dietary Supplements in Infancy
and Childhood**

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Who should supplement and why?



A Dietary Supplement is...

a tablet, capsule, powder, soft-gel, or liquid product that contains at least one of the following:

- **Vitamin**
- **Mineral**
- **Herb or botanical**
- **Amino acid**
- **A concentrate, metabolite, constituent, or extract of any of the above**

The Truth about the Laws

- **Dietary Supplement Health and Education Act (DSHEA): 1994**
 - Dietary supplements are NOT regulated or tested like drugs. **They are regulated as a food!**
 - Manufacturers are free to market supplements without proof of safety or efficacy
 - **No FDA approval needed to sell**
 - No established dosage guidelines
 - No purity restrictions
 - Some supplements have been shown to be contaminated with street drugs!

Under the FD&C Act, it is the **responsibility of dietary supplement companies to ensure their products meet the safety standards for dietary supplements and are not otherwise in violation of the law.**

Dietary supplement labels are required to have nutrition information in the form of a **Supplement Facts label.**

They also must have a statement on the front of the product identifying it **as a “dietary supplement” or similar descriptive term.**

In general, even if a product is labeled as a dietary supplement, a product intended to treat, prevent, cure, or alleviate the symptoms of a disease is a drug, and subject to all requirements that apply to drugs.



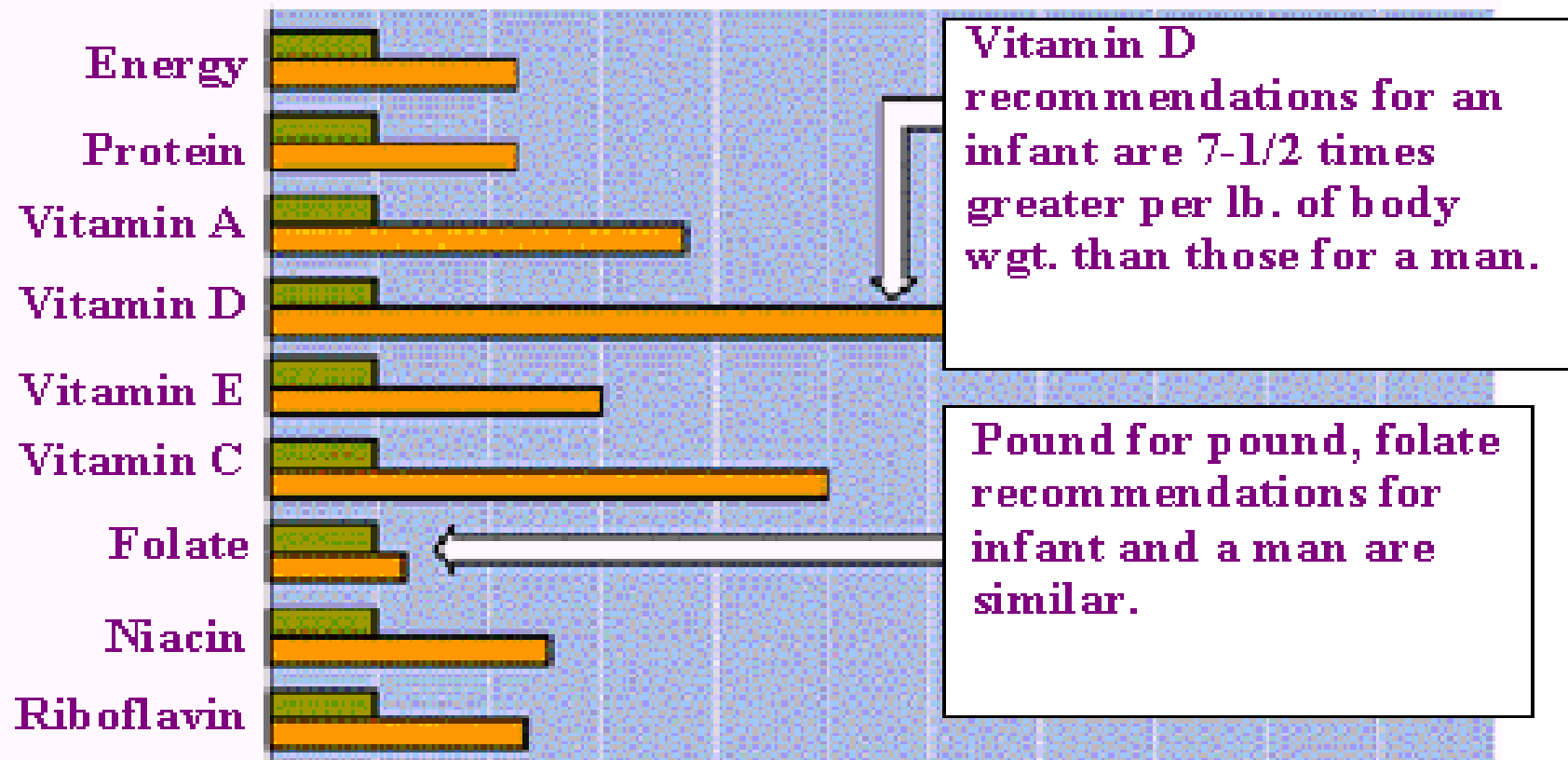
Supplements are big business!

The global dietary supplements market is projected to grow from \$71.81 billion in 2021 to \$128.64 billion in 2028.

Does Children Need a Dietary Supplement?



Nutrient Requirements of an Adult vs. 5 month old

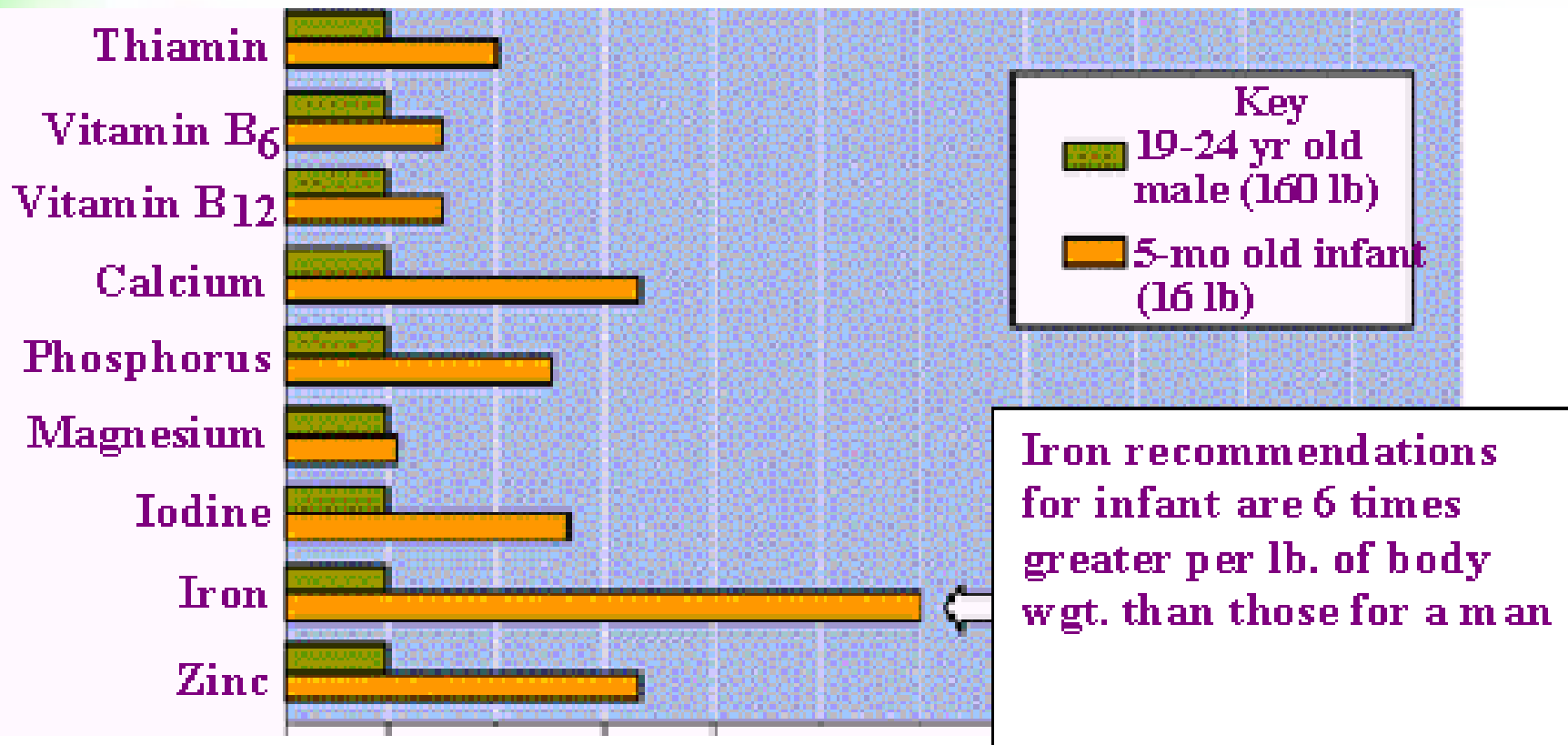


RDA for man
19-24 years old

5 times as much
per lb. as a man

10 times as
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Vitamin and mineral supplementation is widely believed to enhance appetite, growth, development and general health.



Who should supplement and why?

Major scientific groups, such as the American Dietetic Association and American Society for Clinical Nutrition, believe that giving vitamin and mineral supplements is unnecessary for healthy children.

The American Academy of Pediatrics does not advise supplement use for the general pediatric population.

Nutrition scientists generally agree that most children can obtain the vitamins and minerals they need if they eat a **healthy diet.**

Low food intake is generally associated with low food availability at household level and inappropriate maternal feeding practices, loss of appetite resulting from infections, unbalanced and monotonous diets and micronutrient deficiencies.

The development of children's food preferences involves a complex interplay of genetic, familial, and environmental factors.

Over control, restriction, pressure to eat, and a promise of rewards have negative effects on children's food acceptance.

Parents' Conception

Children with **normal** weight considered by their parents as a **little too light** or **too light**.
Overweight children regarded as **normal** weight, and **obese** children considered normal or a **little too heavy**.

Parents should choose meal times, propose adequate food and portion sizes, and promote social interaction and role modeling for eating behaviors.

It is important to let parents know that children who are **self-regulated in diet may better handle the current food-surplus environment.**

So,

Nutrient needs should be met primarily through consuming foods, **but in certain cases, fortified foods and dietary supplements may be useful in **providing one or more nutrients** that otherwise might be consumed in less than recommended amounts.**

The following summary characterizes conditions in children who are at risk for nutrient deficiencies. In the presence of any of these factors, supplementation is advised.

- They **eat** a very low-calorie diet
- Their mothers **eat** an all-plant diet (vegan)
- They are **premature, breastfed.....**
- They have a **nutritional deficiency**
- They are taking **medications that interfere** with their body's use of specific nutrients
- They have a **disease, infection, or injury or recently had surgery**

When deciding whether to recommend the use of dietary supplements, it is important to consider the **benefit:risk ratio.**

Some Issues in MVMM Supplementation

- **Interaction between micro nutrients and drugs**
- **Dose dependency**
- **Dose and duration**
- **Toxicity**

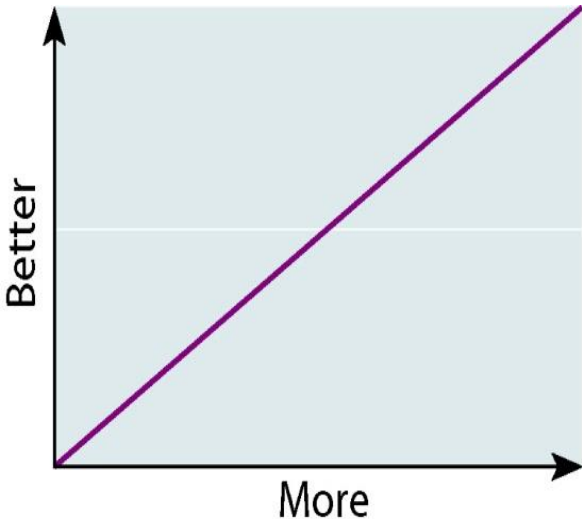
Definitions of Supplements

- **Supplement(To enhance nutrient intake) = 50% to 150% of the RDA**
- **Therapeutic agent(used under medical supervision to correct a nutrient deficiency) = 2 to 10 times the RDA**
- **Pharmacological megadose = usually greater than 10 times the RDA**

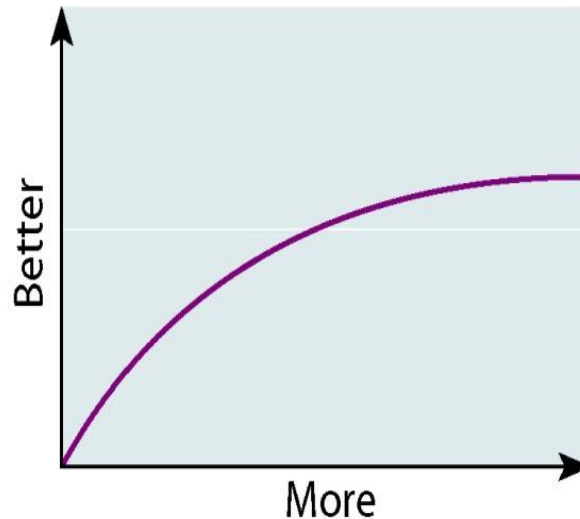
If you decide to prescribe a supplement, look for one that **doesn't exceed the Daily Value (DV) for each vitamin and mineral.**

Vitamin- Mineral Misconception

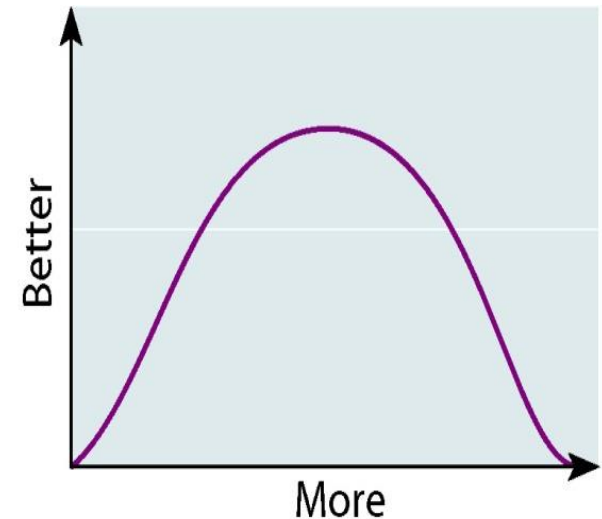
“More is Better”!



As you progress in the direction of more, the effect gets better and better, with no end in sight (real life is seldom, if ever, like this).



As you progress in the direction of more, the effect reaches a maximum and then a plateau, becoming no better with higher doses.

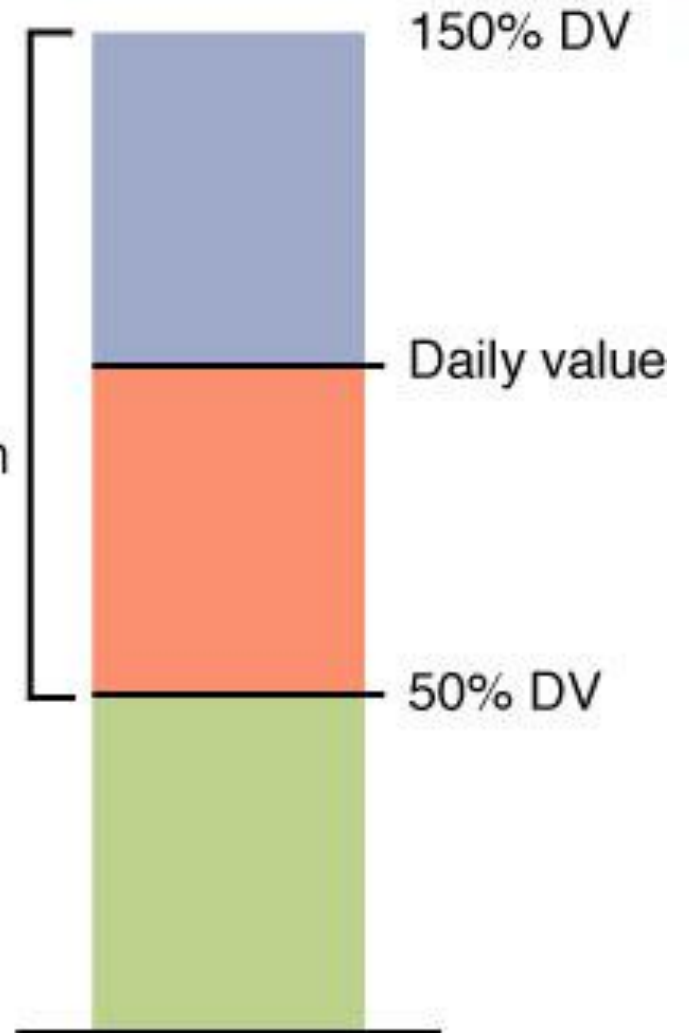


As you progress in the direction of more, the effect reaches an optimum at some intermediate dose and then declines, showing that more is better up to a point and then harmful. That too much is as harmful as too little represents the situation with nutrients.

Which Supplement Should You Prescribe?

No more than 150% of DV!

Rational range for vitamin and mineral supplementation



Remember!!!

**Vitamin and mineral supplements
should not be used as a substitute for a
balanced diet.**

***THANKS FOR YOUR
ATTENTION***

M. H. Eftekhari Ph.D

Dietary Supplementation

Supplementation with a standard infant **MVMM** is generally needed initially after NICU discharge to meet the preterm infants needs, **in particular iron, ca, P, vitamin B complex and vitamin D and A.**

Dietary Supplements

- Breastfed infants may need a **vitamin D (400 IU/day)** supplement **if** sunlight exposure is inadequate or if mother's diet does not include vitamin D fortified dairy foods.
- Adequate exposure is less than 30 minutes per week in just diapers or 2 hours per week in clothes but no hat.

Dietary Supplements

- Breastfed infants may need a **B₁₂ (0,3 to 0,5 Micg/day)** supplement **if** the mother is a vegan
- Infant **iron** stores are depleted at 4-6 months of age, so need an iron supplement **(1mg/kg/day)**.
- Supplementation with vitamin **K (0,5 – 1mg)** soon after birth
- Infants may need a **fluoride (0,25mg/day)** supplement after 6 months of age **if** local water has less than 0.3 ppm fluoride.

Dietary Supplementation

Table 13-11

Supplements for Full-Term Infants

	Vitamin D ^a	Iron ^b	Fluoride ^c
Breastfed infants:			
Birth to 6 months of age	✓		
6 months to 1 year	✓	✓	✓
Formula-fed infants:			
Birth to 6 months of age			
6 months to 1 year		✓	✓

Supplementation

- **Micronutrients of concern in childhood (2 to 6 years):**
 - **Iron(10mg/day)**
 - **Zinc(10mg/day)**
 - **Vitamin E(6 to 7mg/day)**
 - **Vitamin D(400IU/day)**

Vitamin and Mineral Supplementation Recommendations for Full-Term Infants

Vitamin D

Supplementation shortly after birth of 400 IU/day for all breast-fed infants and infants consuming less than 1000 mL of vitamin D–fortified formula each day

Vitamin K

Supplementation soon after birth to prevent hemorrhagic disease of the newborn

Fluoride

Supplement of 0.25 mg/day after 6 months of age if fluoride concentration of water is less than 0.3 ppm

Iron

Breast-Fed Infants

Approximately 1 mg/kg/day by 4 to 6 months of age, preferably from supplemental foods, and only iron-fortified formulas for weaning or supplementing breast milk

Formula-Fed Infants

Only iron-fortified formula during the first year of life

Modified from American Academy of Pediatrics, Committee on Nutrition: Pediatric nutrition handbook, ed 6, Elk Grove Village, Ill, 2009, American Academy of Pediatrics.

Prenatal Vitamins

Supplement Facts

Serving Size 1 Tablet

Amount Per Tablet	% Daily Value for Pregnant/ Lactating Women
Vitamin A 4000 IU	50%
Vitamin C 100 mg	167%
Vitamin D 400 IU	100%
Vitamin E 11 IU	37%
Thiamin 1.84 mg	108%
Riboflavin 1.7 mg	85%
Niacin 18 mg	90%
Vitamin B6 2.6 mg	104%
Folate 800 mcg	100%
Vitamin B12 4 mcg	50%
Calcium 200 mg	15%
Iron 27 mg	150%
Zinc 25 mg	167%