

NUTRIENTS

VS.

CALORIES

DIETARY GUIDELINES

Nutrients:

Carbohydrates

Fats

Proteins

Vitamins

Minerals

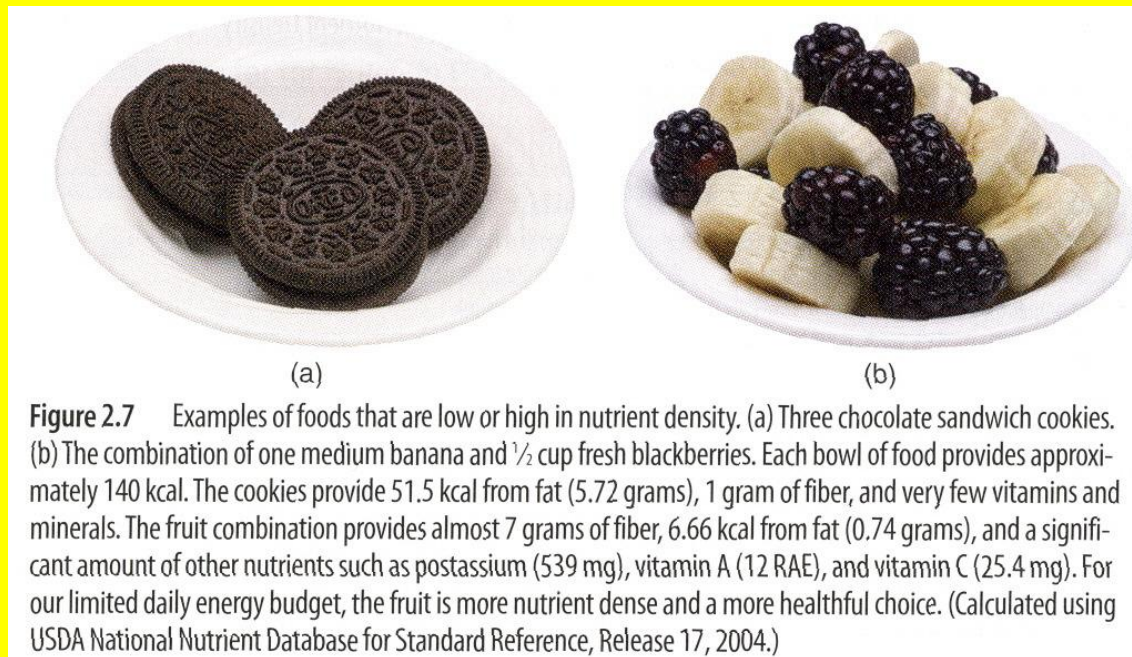
Water



Energy
(calories)

Problem in U.S.: Imbalance Nutrients vs. Calories

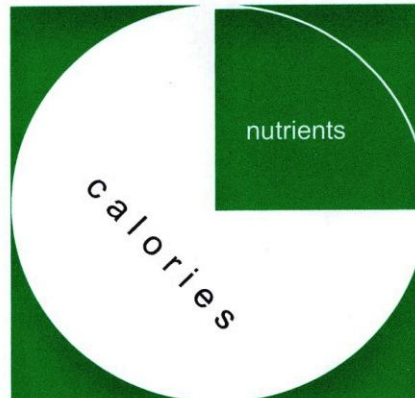
- Too many calories
- Not enough nutrients



NUTRIENTS vs. CALORIES

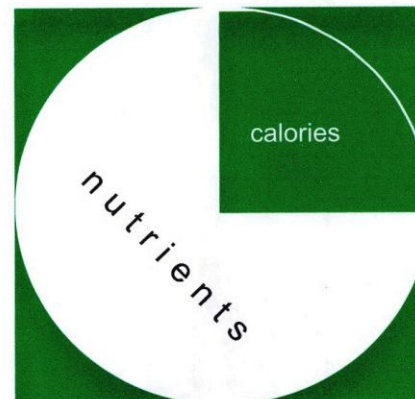
HOW MUCH EVERYDAY

**Not Good -
Too Many
Calories**



Your Daily Diet of "Calorie-Rich" Foods

**Much
Better -
More
Nutrients**



Your Daily Diet of "Nutrient-Rich" Foods

What to do:

1st Read Food labels, Restaurant
Nutrition Sheets:

Look for Calories

2d Follow Dietary Guidelines Recommendations

NUTRIENTS VS. CALORIES

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Eat Healthier Foods – A Better Balance

Eat/Drink Less...

- Total Calories
- Total Fat
- Saturated Fat
- Trans Fat
- Cholesterol
- Added Sugar
- Refined Grains
- Alcohol

Eat/Drink More...

- Vegetables - Dark Green & Orange
- Peas & Beans
- Fruits
- Whole Grains
- Low-Fat or Non-Fat Milk & Milk Products

Make all your food count for **nutrients**

- Makes room in your diet for "fun" foods

Example:

$$2000 \text{ Calories required-activity + body weight} - 1800 \text{ you actually eat} = 200^* \text{ difference}$$

2000
Calories
required-
activity
+ body
weight

* discretionary calories

Discretionary Calories

Can be used for:

1. More nutrient-rich foods
2. Snacks
3. Ice cream
4. Alcohol- if you drink

↑ Exercise

↑ Nutrient Rich Food

↑ **Discretionary Calories**

Why the big deal about fruits & vegetables?

People who eat lots of fruits & veggies everyday:

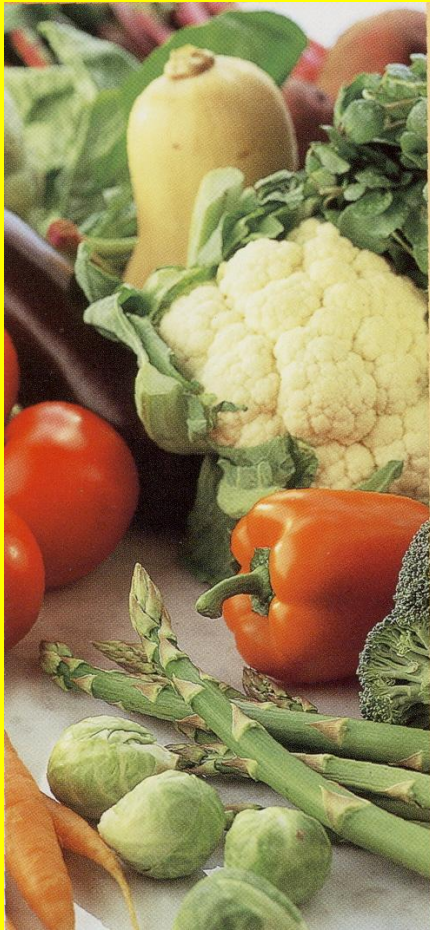
↓ Risk

cancers, cardiovascular disease, cataracts, macular degeneration

Important ingredients in fruits & veggies: **“Phytochemicals”**

- Found in fruits, veggies, whole grains, legumes (peas, beans, lentils), seeds, soy products, garlic, onion, green/black tea
- Natural, protective chemicals in plants (“phyto”)

1 serving veggies = 100 different phytochemicals



Good “Green” Foods

- Bok choy, broccoli, collard greens, dark green leafy lettuce, kale, Romaine lettuce, spinach, turnip greens, water cress, beet greens, chard, Dandelion greens
- Chlorophyll gives green color

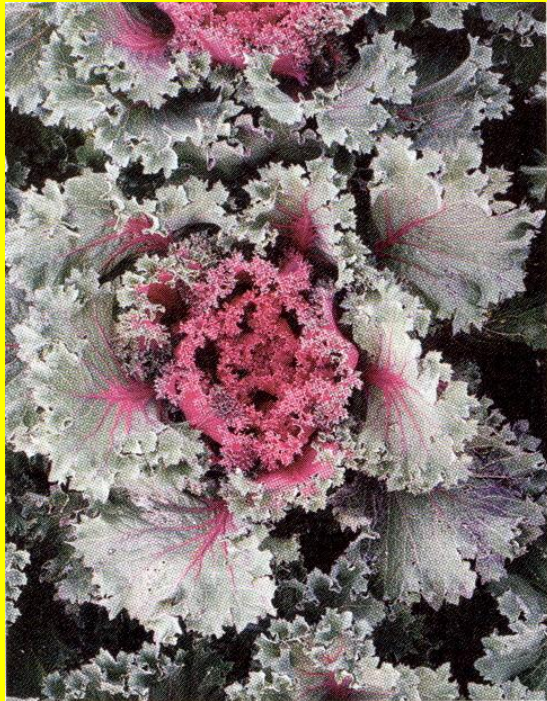
Good Orange-Yellow Foods

- Carrots, sweet potatoes, acorn/butternut squash, apricots, mangoes, pumpkin
- Rich in carotenoids (> 600 types)

Beta-carotene (carrots)

Lycopene= red color tomatoes

Carotenoids also in green veggies: hidden by chlorophyll



In addition to dairy products, kale is an excellent source of calcium.



Eating more fruits and vegetables has been shown to reduce the risk of several cancers.



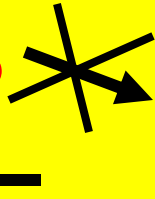
Other plant pigments: purple, red, pale yellow called **flavonoids**

- Examples:

Wine, grape juice, tea, blueberries, raspberries, red cabbage, potatoes, onions



Phytochemicals: How they work

- Some- **antioxidants**: protect cells/DNA from oxidative damage (heart disease, cancer)
- Others stimulate enzymes: **deactivate carcinogens**
- In intestine: block **nitrites** 

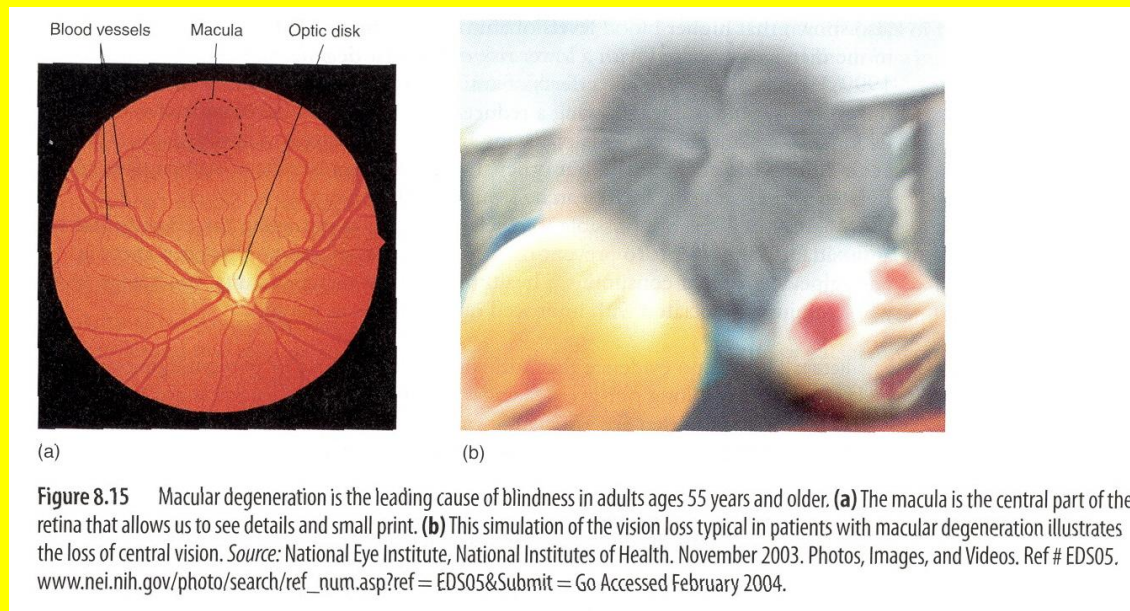
Phytochemicals: How they work

- **Phytosterols:** compete with cholesterol absorption- intestine:
Lower blood cholesterol
- **Phytoestrogens** (soy): Block estrogen's effect $\not\rightarrow$ **cancer**

Phytochemicals: How they work

- Accumulate in eyes:

↓ risk **macular degeneration**
(blindness adults)



Phytochemicals: How they work

- ↓ **Risk: Cataracts**

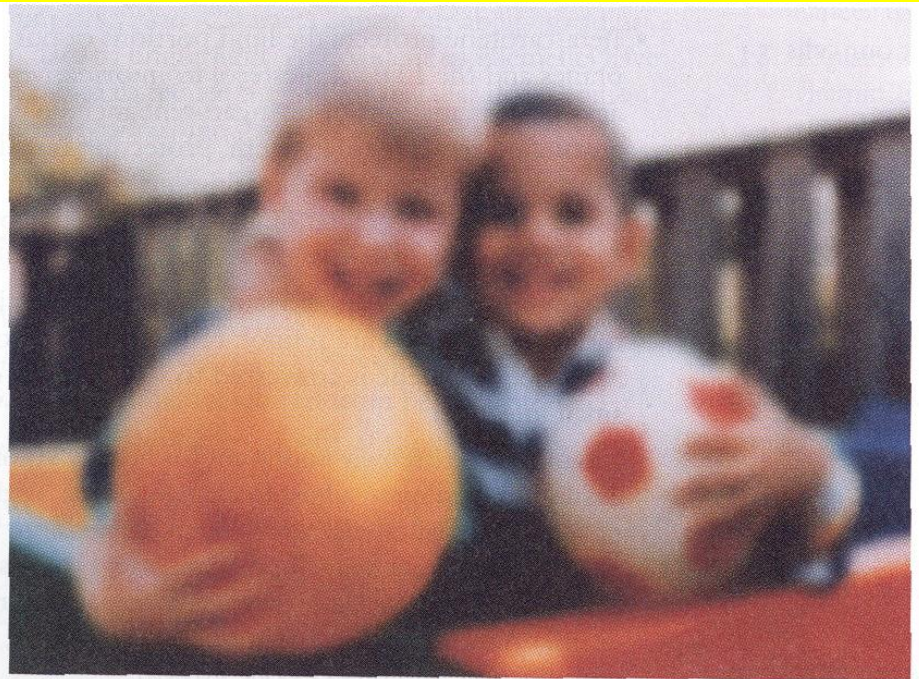
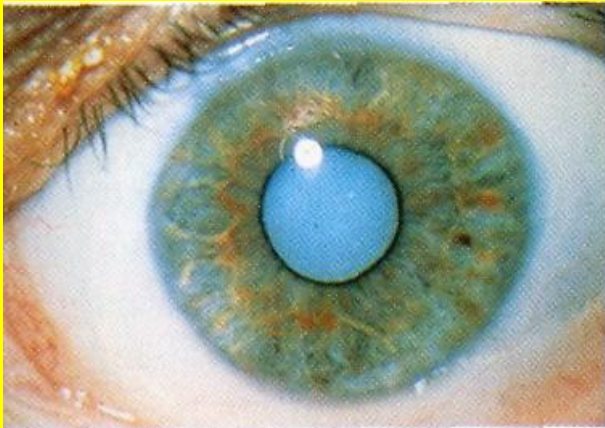


Figure 8.16 Cataracts can impair vision across the entire visual field. *Source:* National Eye Institute, National Institutes of Health. November 2003. Photos, Images, and Videos. Ref # EDS03. www.nei.nih.gov/photo/search/ref_num.asp?ref=EDS03&Submit=Go. Accessed February 2004.

Recommendation: National Cancer Institute

- Eat **rainbow of colors**: 5 differently colored fruit & veggies everyday: **MIX and MATCH**
- **“5-a-day..... the color way”**



FIGURE 10.4

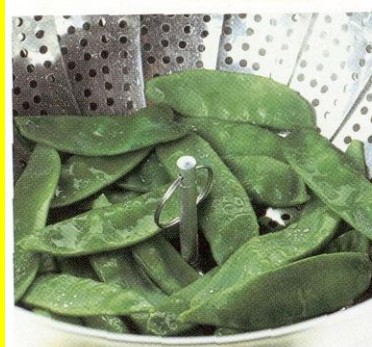
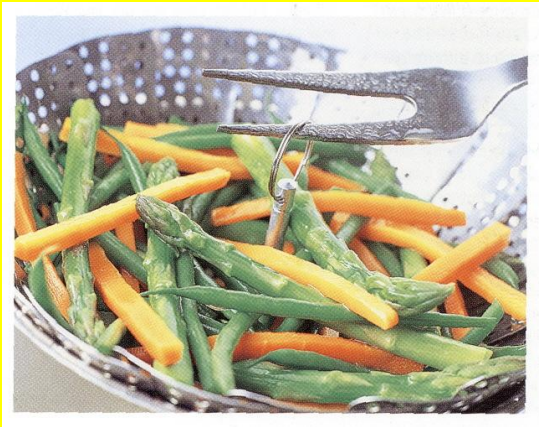
The best way to ensure you are getting a variety of phytochemicals is to choose foods with every color of the rainbow. (red, orange, yellow, and green: A. J. J. Estudi/Age Fotostock America; blue and violet: Andy Washnik)

Problem: most Americans eat just white potatoes not dark green/orange-yellow foods

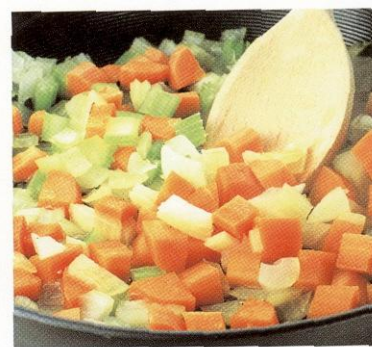


Cook: **minimum** time/little liquid-
vitamins/minerals destroyed by heat

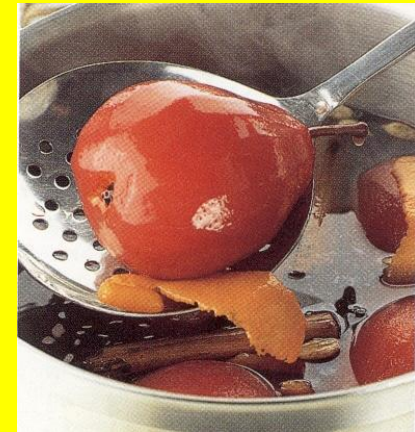
- Steaming, stir-frying, sautéing,
microwaving, poaching



Steaming Since the vegetables are not immersed in water, this method retains the nutrients and taste of fresh vegetables.



Sautéing Requiring very little oil, finely diced vegetables can be quickly fried in a large shallow pan over a high heat.



Acid/Base Balance in Your Body

Acidic Foods: meat, dairy products, processed foods, soft drinks, snacks

↑ Blood Acidity (lower pH)

Body adjusts (homeostasis): pulls calcium from bones

- Balances pH
- Keeps blood more alkaline (basic)
- **Problem: Robbing bones of calcium**

Fruits and Veggies (green leafy)



- ↑ **Alkaline conditions in body**
- ↑ **pH (normal blood pH: 7.36)**
- ↑ **Protect bones**

A Healthy Chocolate Bar?

- Mars, Inc. \$18 billion in revenue (2005)
- Jim Cass (VP): “ Heart disease is the #1 killer in the world, chocolate is the #1 favorite ingredient in the world.”
- “Putting those 2 together is a big idea.”



Mars: Milky Way, Snicker's, M&M's, Uncle Ben's Rice

- **CocoaVia**- dark chocolate rich in flavanols: antioxidant in cocoa beans
- **Flavanols**: Blood-thinning effect, may lower blood pressure
- **CocoaVia**: also contains **plant sterols** (lower cholesterol)



CocoaVia marketed: “Heart Healthy”

- Packages encourage 2 servings/day
- American Heart Association: no current recommendations about chocolate
- Concern: calories & fat

CocoaVia



CocoaVia original: Calories 100

Nutrition Facts	
Serving Size 1 bar (22g)	
Amount Per Serving	
Calories 100	Calories from Fat 60
% Daily Value**	
Total Fat 6g	9%
Saturated Fat 3.5g	18%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0mg	0%
Total Carbohydrate 12g	4%
Dietary Fiber 2g	8%
Sugars 9g	
Protein 1g	
Vitamin A * • Vitamin C 15%	
Calcium 25% • Iron 4%	
Vitamin E 20% • Vitamin B6 15%	
Folic Acid 15% • Vitamin B12 15%	
*Contains less than 2% of the Daily Value of these nutrients.	
**Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
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

Total Fat: 6 grams

Saturated Fat: 3.5 grams

Cholesterol: 0 milligrams

Sodium: 0 milligrams

Fiber: 2 grams

Ingredients:

Semisweet chocolate, sugar, soy lecithin, natural flavor, soy sterol esters, vitamins & minerals

What Americans may be missing: 7 important nutrients

- Based on expert scientists' review: US Departments Health/Human Services & Agriculture

#1 Calcium: strong bones/teeth

Sources: milk, yogurt, cheese, fortified cereal, soy drink, sardines, tofu, salmon, collards, molasses, spinach, soybeans, turnip greens, ocean perch, oatmeal (range: 99-1043 mg)

#2 Potassium: helps control blood pressure

Sources: sweet potato, tomato paste/puree/juice/sauce, beet greens, potato, white beans, yogurt, clams, prune & carrot juices, molasses, halibut, soybeans, tuna, lima beans, winter squash, rockfish, cod, bananas, spinach (range: 405-694 mg)

#3 Fiber: helps control weight, prevents constipation

Sources: beans (navy, kidney, black, pinto, lima, white, great northern, soy), bran cereal, split peas, lentils, artichoke, chickpeas, cowpeas, rye crackers, sweet potato, pears, whole wheat English muffins, bulgur, cooked vegetables, raspberries (range 4-9.5 grams)

#4 **Magnesium**: bone/teeth
formation, muscle contraction, nerve
impulses

Sources: pumpkin & squash seeds,
nuts (Brazil, almonds, cashews,
pine, mixed, peanuts), bran
cereal, halibut, quinoa, spinach,
buckwheat flour, beans (soy,
white, black, lima), Pollock,
bulgur, oat bran, tuna, artichokes
(range: 50-151 mg)

#5 Vitamin A: night vision, bone growth, healthy skin

Sources: Liver, carrot juice, sweet potato, pumpkin, carrots, spinach, collards, kale, mixed vegetables, turnip, greens, fortified cereals (range: 180-9126 micrograms-Retinol Activity Equivalents)

#6 **Vitamin C**: needed to produce collagen for body structures

Sources: guava, peppers (red sweet, green), kiwi fruit, oranges, orange juice, grapefruit juice, vegetable juice cocktail (range: 50-188 mg)

#7 Vitamin E: antioxidant, protects DNA, protein, fat from damage

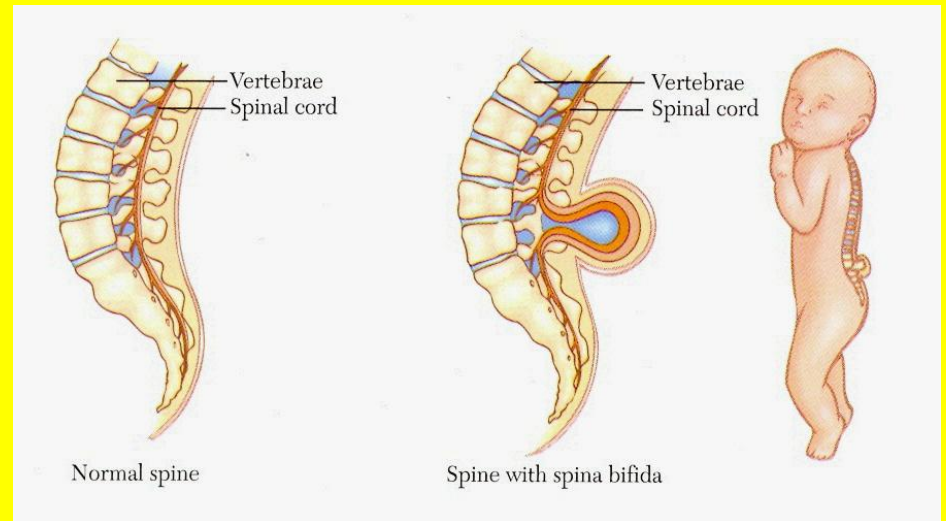
Sources: fortified cereals, sunflower seeds, oils (sunflower, cottonseed, safflower, canola, peanut), nuts (almonds, hazelnuts, mixed, pine, peanuts), peanut butter, turnip greens, tomato paste/puree/sauce, wheat germ, avocado, carrot juice (range: 2.1-12.8 mg)

What teen age girls and women may be missing

- Many teen age girls/women: **iron deficient**
- Iron: hemoglobin (red blood cells)- carry O₂ in blood
- Also need Vitamin C: helps iron absorption
- Required: women: 18 mg/day, men: 8 mg/day

What women may need

- **Folic acid**: helps form DNA for new cells made daily
- During pregnancy: proper development baby's nervous system
- Low folic acid: **Spina bifida**



What older Americans, shut-ins,
people with dark skin may need

- **Vitamin D**: for calcium absorption
- Recommendation: **1000 International units/day**
- Sources: fortified milk, fortified OJ, supplement, egg yolk, cod liver oil, mackerel, salmon, sardines, tuna

