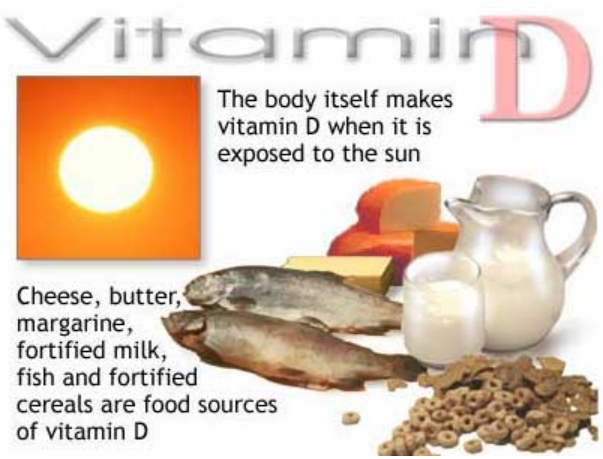
Vitamin D

- Vitamins are organic compounds that are essential in small amounts for normal metabolism
- Vitamin D is the only vitamin that can be made by our bodies, the others must be ingested in the diet
- Vitamin D plays an important role in regulating calcium balance and bone metabolism in the body

Where do you find/get Vitamin D?

- Sunlight and UV rays
- Fortified milk, orange juice, yogurt with Vitamin D
- Fatty fish, cooked salmon, mackerel
- Canned tuna fish
- Cod-liver oil
- Eggs
- Fortified breads and cereals



Why do you need Vitamin D?

- Helps with absorption of calcium from the intestine (maintain a calcium intake of 1000-1200 mg/day)
- Suppresses release of parathyroid hormone (PTH) from the parathyroid gland
- Helps regulate phosphate levels
- Muscle health
- Vitamin D production declines with age

What does it mean if Vitamin D is low?

- it can turn your bones weak or soft, which makes it easier to break or change shape
- your muscles can become weaker, which makes you fall easier
- can lead to hyperparathyroidism
- your immune system can be weakened
- could increase the risk of type I diabetes mellitus by 30% if low in infancy
- association between cardiovascular events and low vitamin D levels

What can you do to increase your Vitamin D level?

- eat more foods with vitamin D
- get the appropriate amount of sunlight
- take vitamin D supplements: take at least **800 international units** of vitamin D a day

How do I know if I am taking too much Vitamin D?

- you will have symptoms of hypercalcemia (elevated calcium): confusion, increased urination, increased thirst, loss of appetite, vomiting, muscle weakness

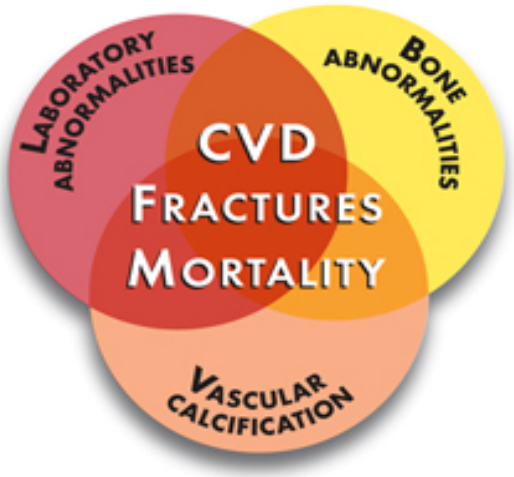
Types of Vitamin D Supplements

- **calcitriol**—(1,25-dihydroxyvitamin D), commonly used for people with chronic kidney disease; calcium levels should be closely monitored
- **calcidiol**—(25-hydroxyvitamin D), commonly used for people with liver disease
- **ergocalciferol (D2)**
- **cholecalciferol (D3)**

Why does the kidney doctor care about Vitamin D levels?

- to prevent chronic kidney disease related mineral bone disorders
- **osteitis fibrosa cystica**—developed from increased PTH levels and results in increased bone turnover
- **adynamic bone disease**—reduced bone cell activity from lowering PTH levels too much with Vitamin D supplements or calcium-phosphate lowering medication

Chronic Kidney Disease–Mineral and Bone Disorder



CKD-MBD

The following foods contain the indicated amounts of vitamin D, as reported by the US Department of Agriculture's (USDA):

- Fortified milk (8 oz) - 100 IU
- Fortified orange juice (8 oz) - 100 IU
- Fortified cereal (1 serving) - 40-80 IU
- Pickled herring (100 g) - 680 IU
- Canned salmon with bones (100 g) - 624 IU
- Mackerel (100 g) - 360 IU
- Canned sardines (100 g) - 272 IU
- Codfish (100 g) - 44 IU
- Swiss cheese (100 g) - 44 IU
- Raw shiitake mushrooms (100 g) - 76 IU
- Most multivitamins (1 tab) - 400 IU