

# HEALTH AND NUTRITION



# Overview:

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- Brief introduction to vitamins and minerals
- Nutrition in Vietnam
- Some specific information about vitamins and minerals
- Supplements
- Weight Gain
- Cold sores

# Vitamins and Minerals

- Your body is very busy – everyday it does thousands of jobs that keep you alive.
- Each vitamin and mineral has a unique role in the body for maintaining health and contributing to these jobs that your body does



Vitamins can be made by the human body or plants



Minerals are found in soil and water, and must be eaten by humans

# Vitamins

- There are two types of vitamins – water soluble and fat soluble
- Water soluble vitamins are found in the watery portions of the foods you eat. They are absorbed directly into the blood stream as food is broken down during digestion.
- Rather than slipping easily into the bloodstream like most water-soluble vitamins, fat soluble vitamins gain entry to the blood via lymph channels in the intestinal wall.

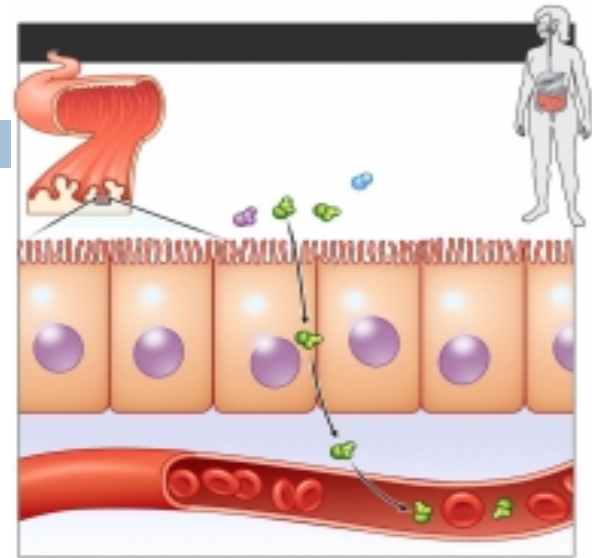
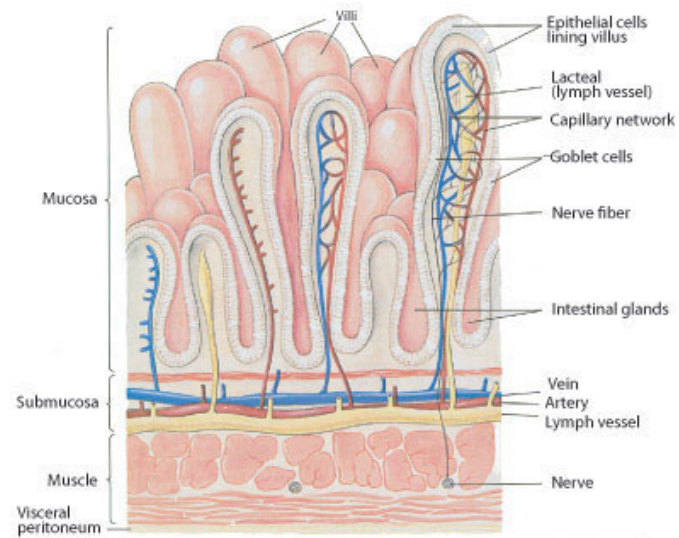


Figure 22-27  
Human Biology: A Guide to Biology  
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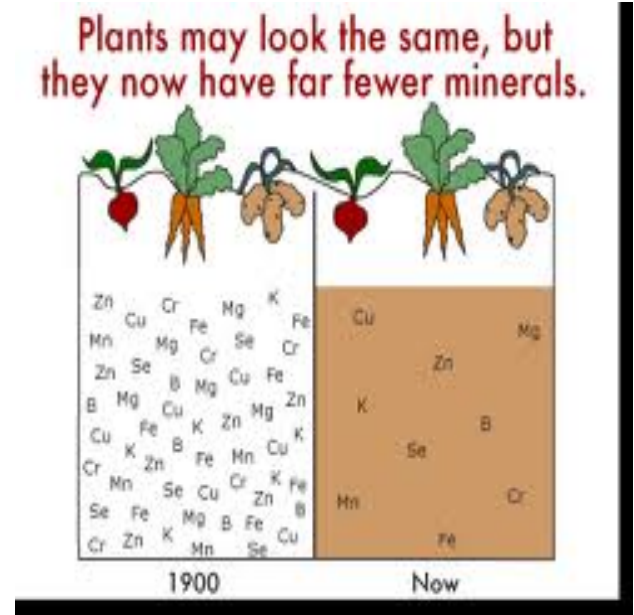


This is a close-up view of the lining in the small intestine, where the most nutrient absorption occurs.

- A lot of your body consists of water. This means that many water soluble vitamins can move around your body easily. Water soluble vitamins have many tasks in the body. One of the most important is helping to free the energy found in the food you eat. Others help keep tissues healthy. Water soluble vitamins are:
  - B-Vitamins – B1, B2, B3, B5, B6, B7, B9, B12
  - Folate (folic acid)
  - Vitamin C
- Rather than slipping easily into the bloodstream like most water-soluble vitamins, fat soluble vitamins gain entry to the blood via lymph channels in the intestinal wall. Fatty foods and oils are reservoirs for fat soluble vitamins. Within your body, fat tissues and the liver act as the main holding pens for these vitamins and release them as needed. To some extent, you can think of these vitamins as time-release micronutrients. It's possible to consume them every now and again, perhaps in doses weeks or months apart rather than daily, and still get your fill. Your body squirrels away the excess and doles it out gradually to meet your needs.
- Fat soluble vitamins help keep your eyes, skin, lungs, gastrointestinal tract and nervous system in good repair. They help build bones and protect vision.
- Fat soluble vitamins are:
  - Vitamin A Vitamin D Vitamin E Vitamin K

# Minerals

- Humans and plants **CANNOT** make their own minerals
- Minerals are absorbed into the human diet from soil and water
- Over-farming and the use of some chemicals decrease the amount of minerals in the soil
- This is one of the reasons that people can become deficient in minerals



# Minerals

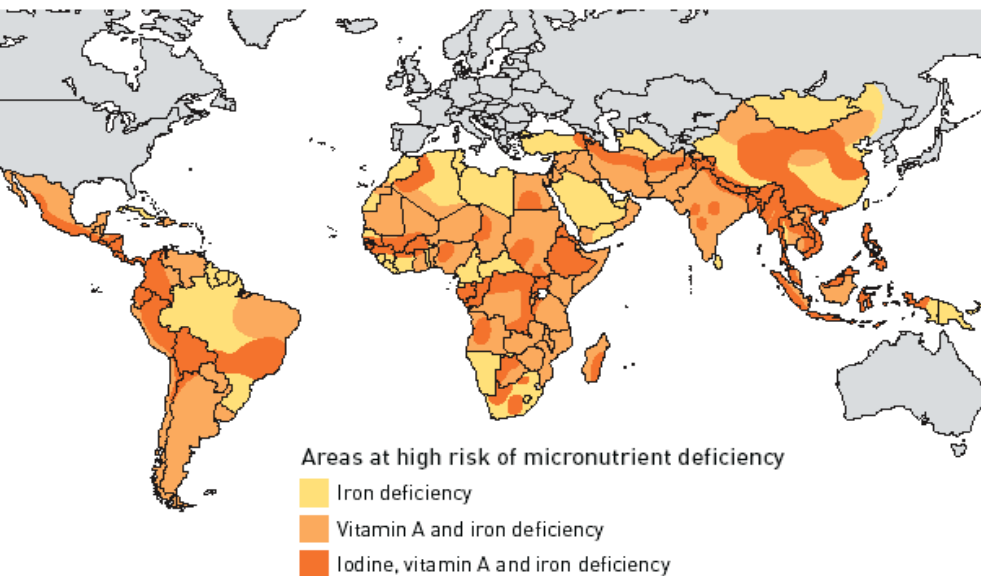
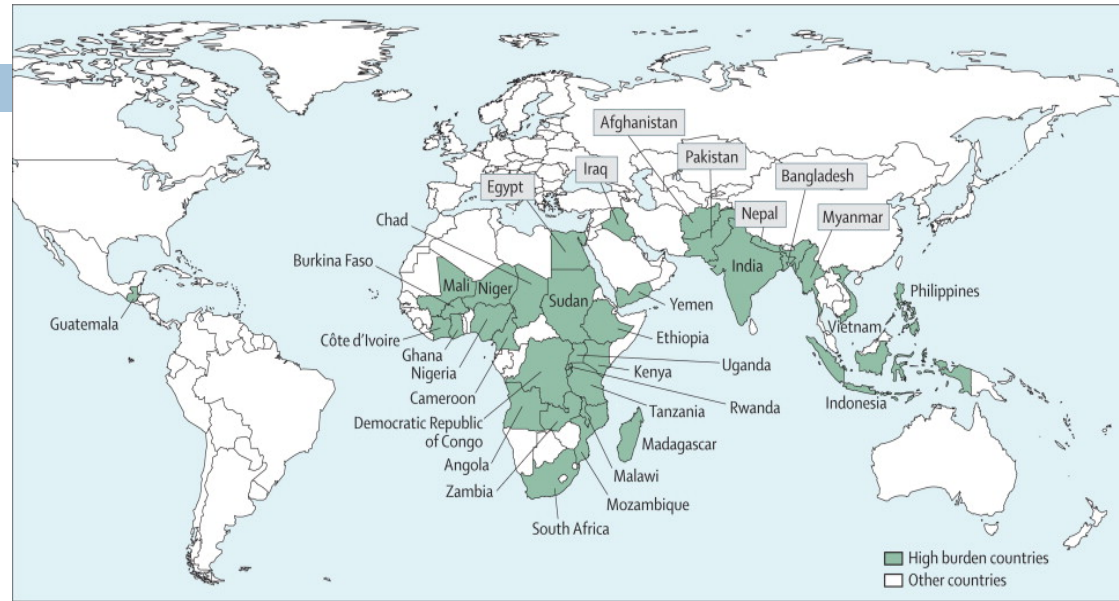
- Minerals can be categorized as being major minerals or trace minerals. Major minerals are no more important to your health than the trace minerals, they are just present in your body in greater amounts.



# Nutrition in Vietnam

More than 1/3 of children in Indonesia, Laos PDR, the Philippines, PNG and Vietnam have anemia.

7 out of 10 people in rural Vietnam receive less than the required nutrient intake of calcium, iron and vitamins A, C, B12 and niacin compared to urban communities.



It is estimated that annually Vietnam loses US\$544 million in GDP to vitamin and mineral deficiencies and the health problems that this causes.



- Vitamin and mineral deficiency is a big problem all over the world.
- Vitamin and mineral deficiency compromises immune systems, leading to the deaths of approximately 1 million young children a year and poor health and growth for many more
- It is estimated that vitamin and mineral deficiency is responsible for the deaths of approx 60 000 women in child birth and 250 000 birth defects every year.
- Most of the irreversible damage due to malnutrition in Vietnam happens during gestation and in the first 24 months of life.
- Countries with the highest burden of malnutrition. These countries account for 90% of all malnutrition in the world.

# Who's at risk



Children



Pregnant and Lactating Women



People with  
gastrointestinal  
disorders



The Elderly



Vegans and Vegetarians

# Anemia

- Anemia is a condition where you have a lower number of red blood cells, **OR** your red blood cells don't have enough haemoglobin (a protein in the red blood cells that carries iron)

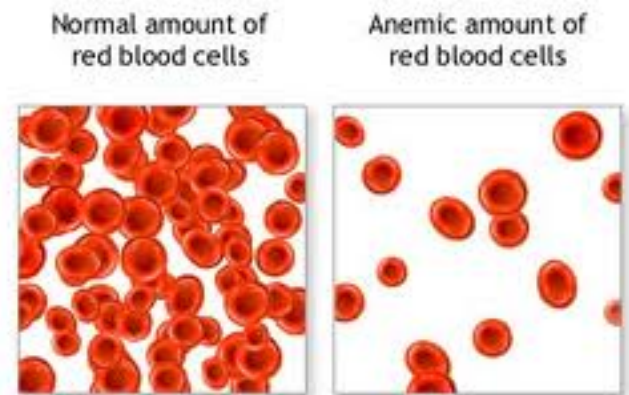
*In Vietnam in 2006:*

*3 out of 5 children 0-23 months had anemia*

*Almost half of all children had anemia*

*2 out of 5 non-pregnant women had anemia*

*Half of pregnant women had anemia*

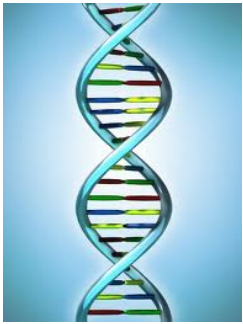


# Anemia

- Anemia is bad for your health because –
  - ▣ Haemoglobin carries iron, which carries oxygen around your body. If you don't have enough haemoglobin, you don't have enough oxygen
  - ▣ If you don't have enough red blood cells, then you don't have enough oxygen
  - ▣ This lack of oxygen is what causes most of the symptoms of anemia – such as feeling dizzy, cold hands and feet, and fatigue
  - ▣ This can particularly affect pregnant women, because their bodies, and their baby, needs a lot of oxygen to support normal growth and development
  - ▣ Your heart also has to work harder when you have anemia – which can cause your heart to beat faster, or with a funny rhythm

# Anaemia

## Causes of Anaemia



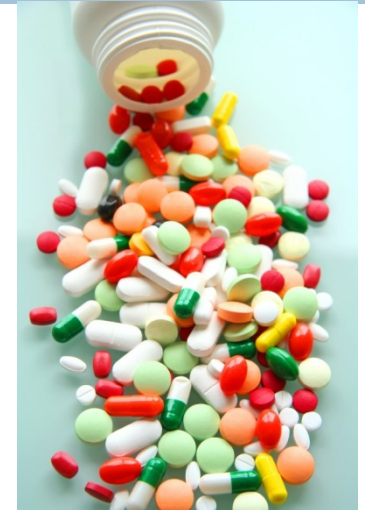
Genetics



Trauma



Immunologic



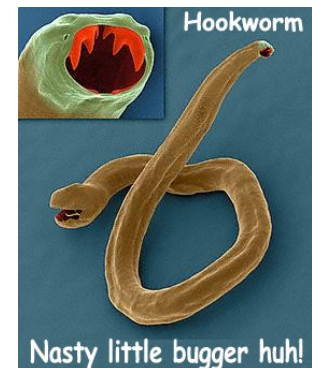
Medication



Chronic diseases and cancer



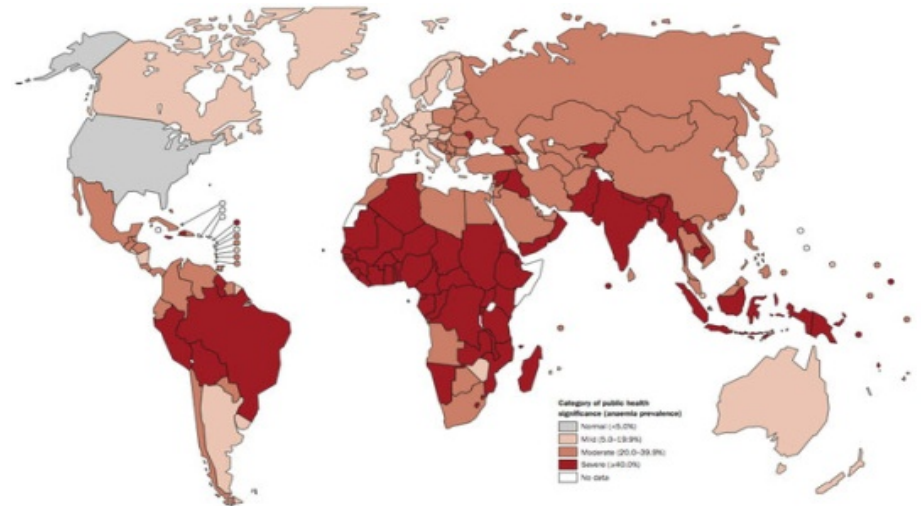
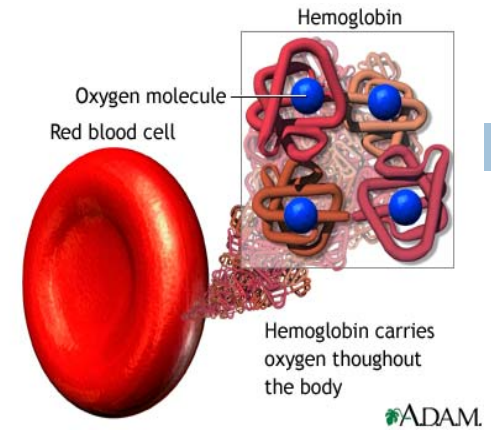
Nutrition



Infection

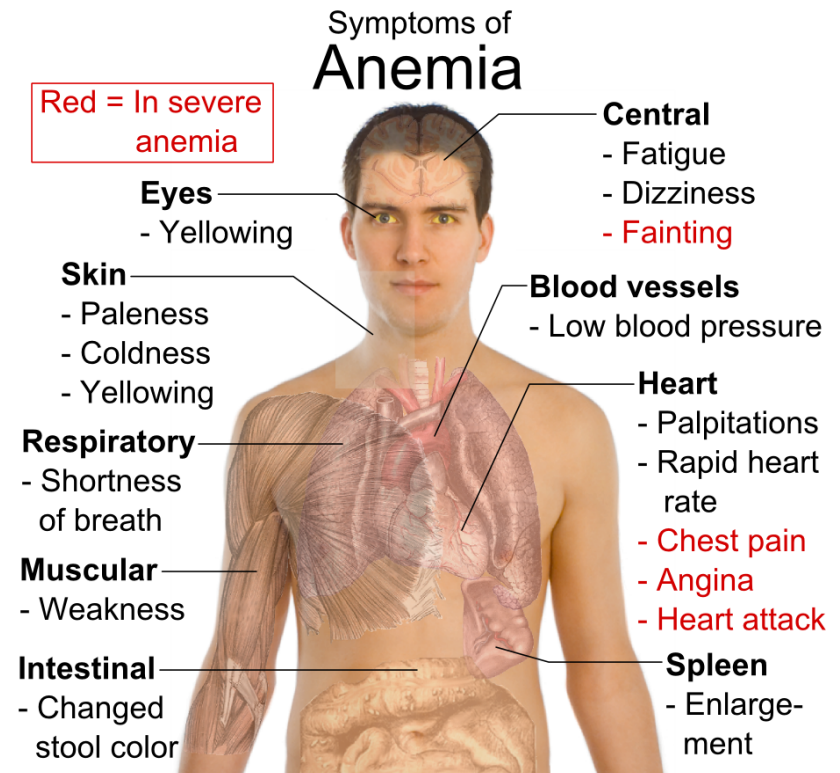
# Iron Deficiency Anaemia

- Iron carries oxygen around your body
- Iron deficiency and iron deficiency anaemia are big problems in vietnam
- 3 out of 10 pregnant women and children under 5 have an iron deficiency
- Iron deficiency can lead to complications for the mother and baby during birth, and developmental problems for children



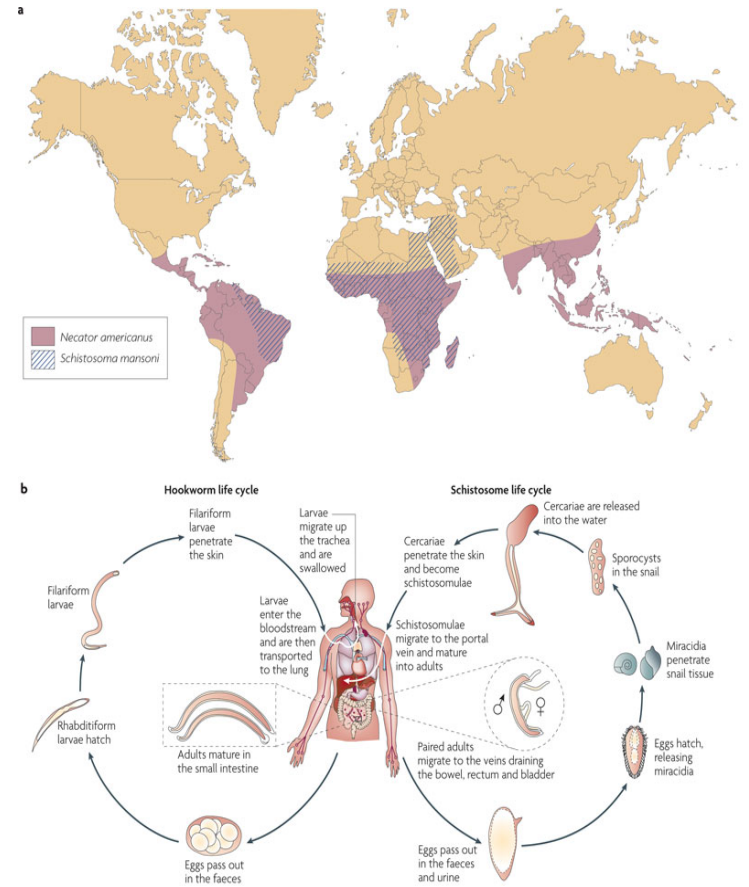
# Iron Deficiency Anemia

- The main symptom of iron deficiency anemia is extreme tiredness and pale skin.
- Another common complaint in children is decreased concentration
- Craving for peculiar substances such as paper, ice or dirt.
- The curvature of the nails changes and grows upwards, depicting a condition known as koilonychias.
- Mouth becomes sore with cracks at the corners.



# Hookworms

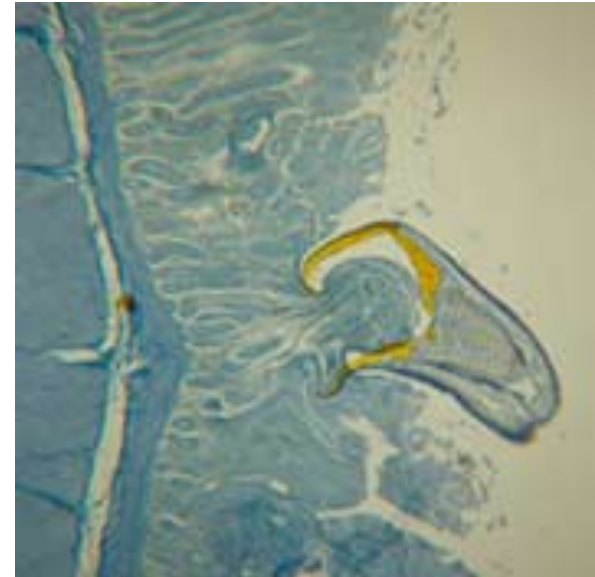
- Hookworm infestation affects about 740 million people in tropical developing countries in Africa and South East Asia
- Hookworms **DO NOT** just affect children – this is especially important for women of reproductive age as this can be another cause of anaemia that will affect outcomes in pregnancy
- Hookworm larvae can enter your body through your skin (from the soil) or through your mouth (from having soil under your fingernails, or from poo) – it is particularly common in areas of poor hygiene





# Hookworms

- **Ancylostomiasis** also known by several other names, is the disease caused when *A. duodenale* hookworms, present in large numbers, produce an iron deficiency anaemia by sucking blood from the host's intestinal walls.
- Infestation with anything more than 40 hookworms in the gastrointestinal tract is enough to cause blood loss, and eventually iron-deficiency anaemia



# Vitamin B12 Deficiency Anemia

- Vitamin B12 is a B-complex vitamin that is important for your brain and nervous system
- You can only get Vitamin B12 from animal sources. If you are mainly eating vegetables, you are at risk of becoming deficient
- You need Vitamin B12 to make red blood cells, which carry oxygen around your body
- It takes 4-5 months of Vitamin B12 deficiency before becoming anemic

# Vitamin B12 Deficiency Anaemia

- **Symptoms of Anemia Caused by Vitamin B12 Deficiency**
  - A tingling, "pins and needles" sensation in the hands or feet
  - Lost sense of touch
  - A wobbly gait and difficulty walking
  - Clumsiness and stiffness of the arms and legs
  - **Dementia**
  - **Hallucinations, paranoia, and schizophrenia**

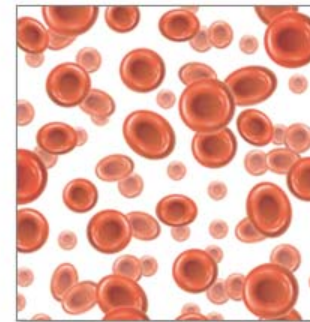


- The group of vitamins known as the B-complex vitamins is essential for growth, development and a variety of other bodily functions. They play a major role in the activities of enzymes, proteins that regulate chemical reactions in the body, which are important in turning food into energy and other needed substances. B-vitamins are found in many plant and animal food sources. B vitamins are an important part of the diet and are needed to help avoid many health problems. All B vitamins help turn food into fuel.
- The B vitamins are vitamin B1, B2, B5, B6, B7, B7 and B12. Originally, scientists thought that these vitamins were all very similar, because they were commonly discovered in the same foods. However, each B vitamin should be thought of as distinct, with its own function within the body.

# Folate Deficiency Anemia

- Folate is a B-complex vitamin, like vitamin B12
- Folate has two very important jobs in the body – it is needed to make red blood cells and to make neural tubes which are important for the normal development of fetuses.
- Your body cannot store folate, so it needs a fresh supply constantly
- Folate deficiency anemia causes the red blood cells to be abnormally large, also called “megoblastic” or “pernicious” anemia

Folic acid is necessary for red blood cell production and neural tube formation



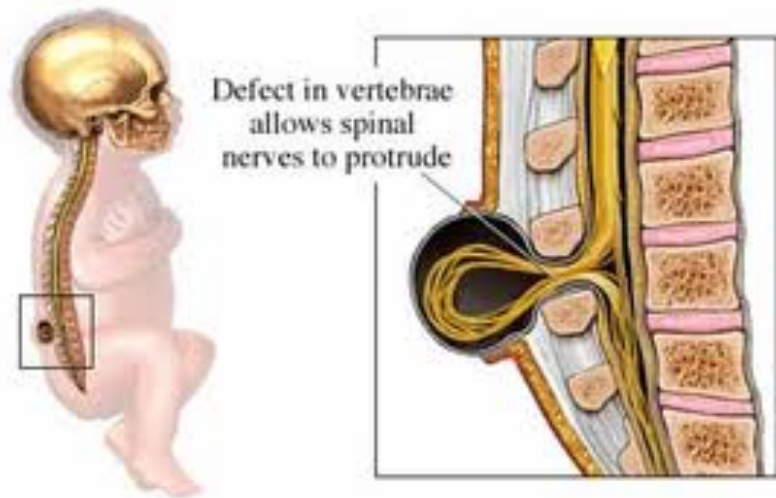
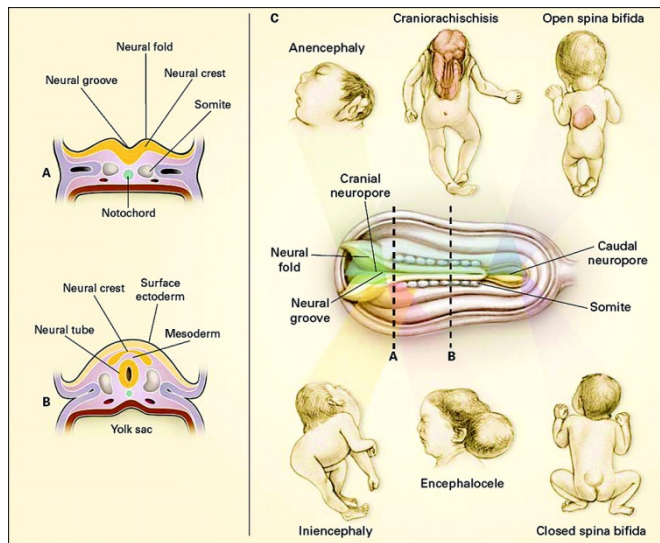
# Folate Deficiency Anemia

- Symptoms of folate deficiency anemia may include the following:
  - ▣ abnormal paleness or lack of color in the skin
  - ▣ decreased appetite
  - ▣ irritability
  - ▣ lack of energy or tiring easily (fatigue)
  - ▣ diarrhea
  - ▣ smooth and tender tongue



# Neural Tube Defects and Folate Deficiency

- ❑ Folate is very important for a baby's development
- ❑ Folate helps in the formation of the neural tube and the spine,
- ❑ A neural tube defect is an opening in the spinal cord
- ❑ This defect occurs very early, around week 3 gestation



# Treatment of Nutritional Anemia

- The first step if you have anemia caused by Iron, Vitamin B12 or Folate deficiency is to increase the amount of these in your diet
- However, if you have moderate or severe anemia, diet is unlikely to be enough and you will probably need to take supplements
- Your body can't make iron, and doesn't store a lot of folate or vitamin B12, so once you have finished the supplements you will need to make sure you have enough nutrients so it doesn't happen again

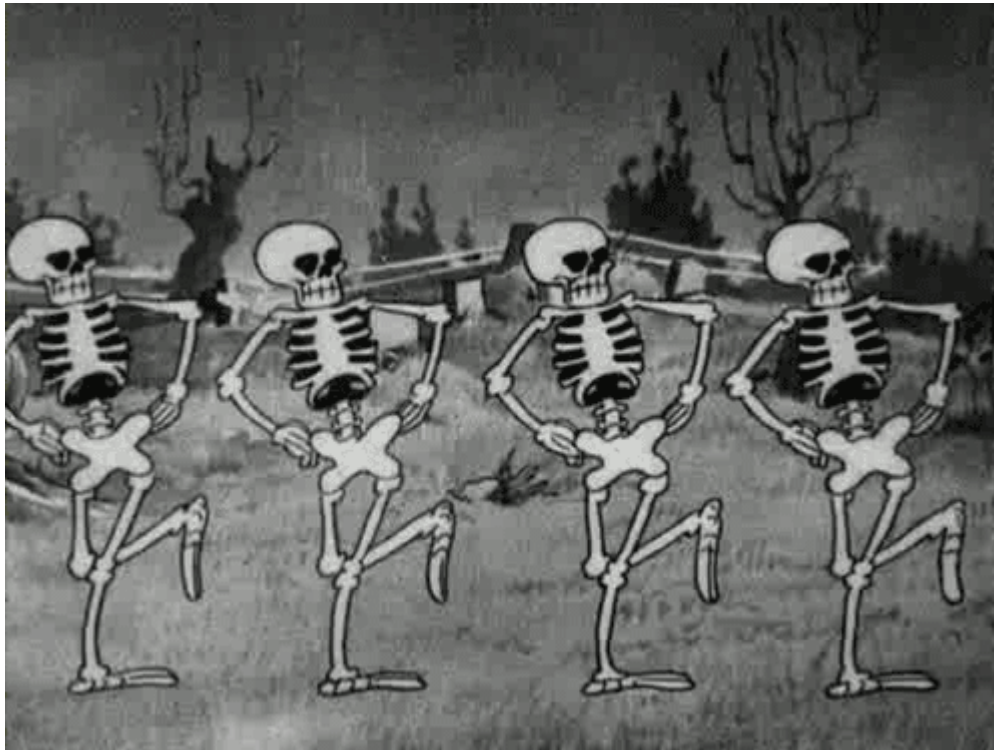


# Supplements

- All pregnant women should be receiving folate and iron supplements – 60mg Iron and 400 units of folate
- If you are taking supplements to correct anemia, it can take up to 3 months before nutritional deficits are restored
- Supplements do have side effects
  - ▣ Iron supplements can cause diarrhoea and abdominal discomfort. Too much iron can damage the lining of your stomach and in very severe cases cause death
  - ▣ Folate and Vitamin B12 are water soluble, so side effects and toxicity are rare
  - ▣ Excess folate can mask Vitamin B12 deficiency and diagnosis of pernicious anemia
  - ▣ Excess Vitamin B12 can cause numbness and tingling in arms, anxiety and rashes. It can also make some conditions worse like hyperthyroidism and mitral valve prolapse. There is some evidence that taking megadoses of Vitamin B12 can be linked to cancer

# Calcium

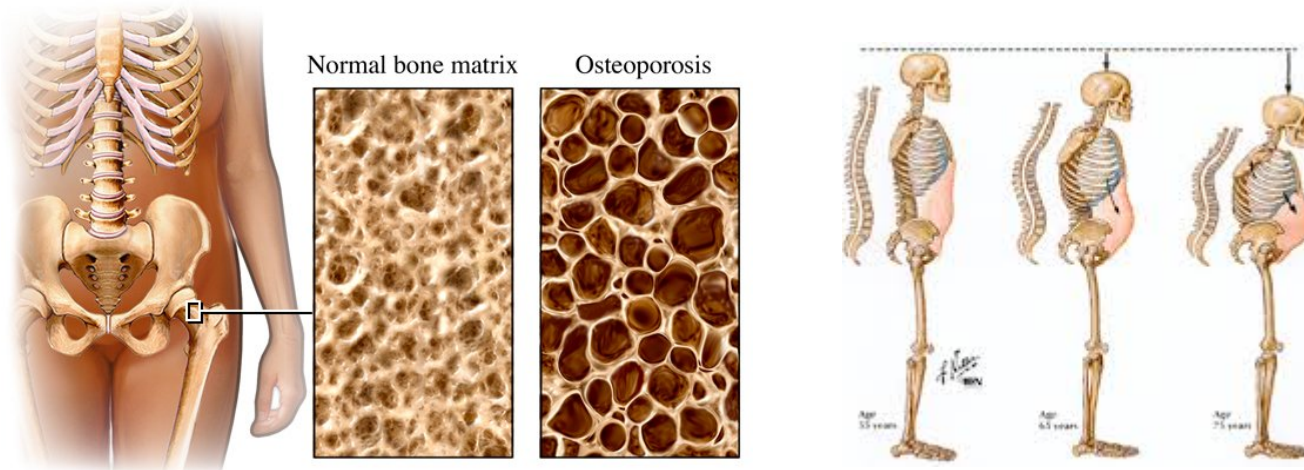
- Calcium is a mineral, and it is the most common mineral in the human body



- Calcium is a mineral, and it is the most common mineral in the human body
- Calcium is important for healthy bones, muscles, nerves and the heart
- Calcium is important for building bone and for maintaining bone. It is the mineral that makes your bones 'hard'
- Calcium is stored in bones, so if you aren't getting enough calcium in your diet, your body will take it from your bones. This makes it more difficult for your body to build new bone
- In the short term, calcium deficiency doesn't have a lot of symptoms
- In the long term, calcium deficiency can lead to osteoporosis

# Calcium and Osteoporosis

- ❑ Osteoporosis is a disease of the bones where the bones are 'thin'
- ❑ Osteoporosis can be incredibly painful and leads to bone fractures
- ❑ There are almost 3 million people in Vietnam who suffer from osteoporosis, with 7 out of 10 sufferers being women
- ❑ Osteoporosis can be very hard for sufferers, who may have trouble walking and moving and are in a lot of pain

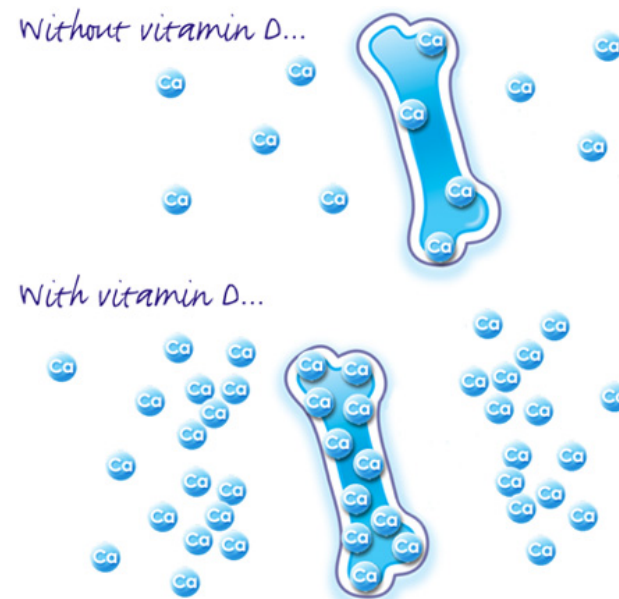
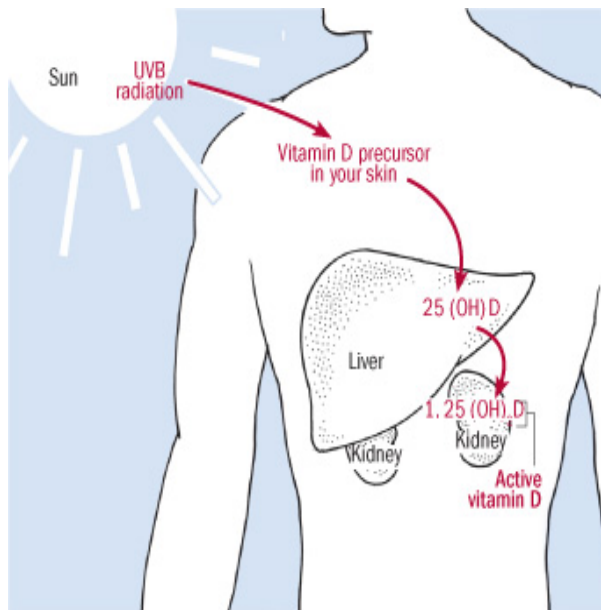


# Lactose Intolerance

- Lactose intolerance is a disorder where your body cannot break down lactase, which is a sugar found in milk and dairy products
- Symptoms
  - ▣ Bloating and abdominal cramps
  - ▣ Flatulence
  - ▣ Nausea, vomiting and diarrhoea
- 3% of white Western Europeans are lactose intolerant while up to 90% of South East Asian people are lactose intolerant
- If you have any of these symptoms after eating dairy, you might be lactose intolerant
  - ▣ Don't force yourself to eat dairy just because of calcium
  - ▣ Soy milk, tofu, dried fish (with bones), oranges, and mustard greens are alternative food sources of calcium
  - ▣ You can also take probiotics to help your body digest lactose more easily

# Calcium and Vitamin D

- Vitamin D is a vitamin that is made in your body when your skin has contact with ultraviolet B rays from the sun
- Vitamin D helps your body absorb calcium.
- If you don't have enough vitamin D, then you can't absorb calcium even if you are getting enough from your diet



# Vitamin D Deficiency

- You need to spend 5-30 mins everyday between 10am and 3pm with bare face, hands, forearm or feet directly in the sun to get enough vitamin D
- Symptoms of Vitamin D deficiency”
  - Symptoms don't normally show until someone has a severe deficiency
  - Extreme muscle weakness – like have difficulty climbing stairs or getting up from chairs
  - Numbness and tingling in the hands and feet – bone pain
  - Rickets – in children, failure of bone tissue to properly mineralize, resulting in soft bones and skeletal deformities,
  - Osteomalacia – softening of the bones
  - Increases risk of osteoporosis in old age
  - Symptoms of bone pain and muscle weakness can indicate inadequate vitamin D levels, but such symptoms can be subtle and go undetected in the initial stages.

# Vitamin D and Calcium Supplements

- ❑ If you aren't getting enough sun (or don't want to get enough sun!) then you might need to take Vitamin D supplements
- ❑ Vitamin D is usually included in most multivitamins
- ❑ It is safe to take Vitamin D up to 600 units per day
- ❑ If you think you are getting enough calcium in your diet, but are still deficient, then you should try Vitamin D first
- ❑ It is recommended that you get 1000mg of Calcium per day, though your body can only absorb 500mg at one time
- ❑ If you are thinking about taking calcium supplements, you should talk a doctor about what dose is right for you.



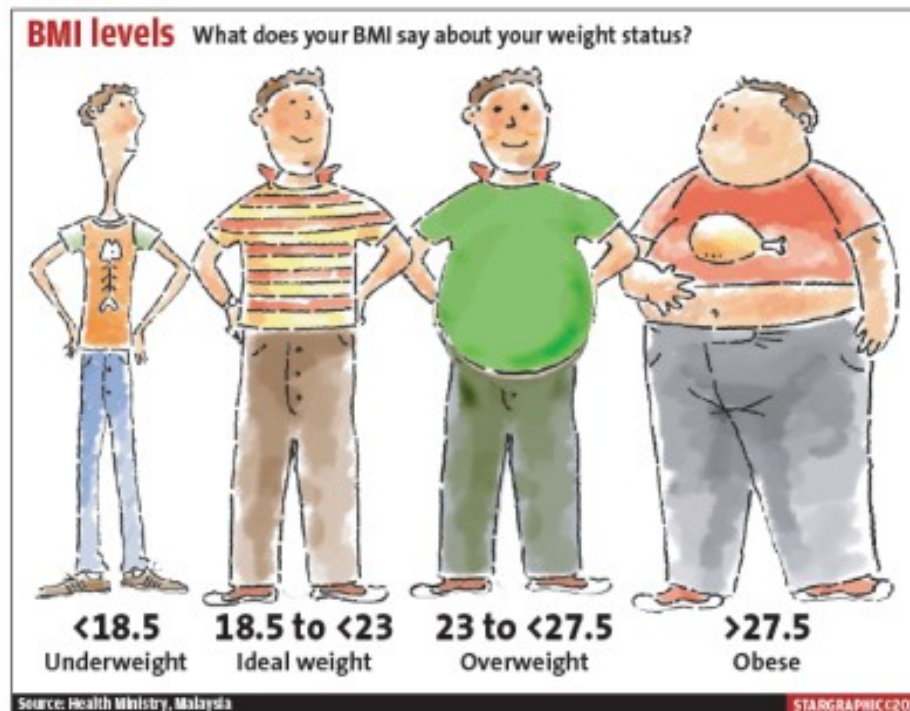


# Weight Gain

- Gaining weight is not just about eating more 'fatty' foods, its about eating the right foods
- Your body needs a certain amount of calories to keep your organs going, for cellular activity and other bodily functions. This is called your Resting Metabolic Rate or your Basal Metabolic Rate
- Your Resting Metabolic Rate does not include the amount of energy you use when you exercise, or use in your day to day life
- To gain weight and strength, you need to eat and drink more calories than you are using.

# Weight gain

- A good first step is to figure out how much weight you need to gain in order to be healthy
- You can do this using a BMI calculator



# Weight Gain

## Tips and Tricks

- Instead of trying to eat 3 big high energy meals, have several small meals throughout the day
- NEVER SKIP A MEAL
- Have high energy snacks and drinks in between meals
- Have 1-2 serves of protein rich foods everyday
- Add oil to your cooking
- Eat dense fruit

# Weight gain

## Tips and Tricks

- Eat more fried rice instead of plain white rice
- Brown rice is better for gaining weight than white rice
- Ask for extra meat on banh mi's and noodles
- Have egg and meat banh mi's for breakfast
- Add butter or avocado to bread
- Add more oil to cooking
- If drinking milk, make sure it is whole fat milk
- Eat peanut butter – it is high in calories, folate, protein. Magnesium and B-vitamins
- Have fruit smoothies with sweet milk
- Yoghurt and cheese – high in calories and calcium
- Bananas – high in potassium and calories
- Eat nuts and seeds
- Potatos – good source of carbohydrates and sugars
- Soybeans – high in protein, iron , fiber and B-vitamins
- You need to eat high energy foods at every meal. These include meat, egg, fried tofu, fried noodle, omelet, peanuts, fried fish, shrimp, avocado, dumpling, sweet potato, sweet soup, soy milk, soya beans, banh mi, vegetables fried in oil, peanut butter, condensed milk, cream, cheese, ice cream, fried spring roll, chicken, rice snacks, dried fruit.

# Protein

- Protein is important for weight gain
  - If you don't consume protein you will lose lean body mass and your weight gain won't be healthy or sustainable
- You need to eat 1-2 serves of protein per day
- One serve of protein is
  - 65-100g meat or chicken – the size of a deck of cards
  - 80-120g fish
  - ½ cup cooked legumes (soya beans, kidney beans)
  - 2 eggs
  - 300g tofu



# Cold Sores

- ❑ Cold sores are caused by the Herpes Simplex Virus 1— which is different from Genital Herpes
- ❑ There is no cure for herpes
- ❑ You can do something to stop the spread of cold sores
- ❑ The virus that causes cold sores is spread through
  - ❑ Saliva and fluid from blisters around the mouth
  - ❑ Kissing
  - ❑ Using the same eating/drinking utensils
  - ❑ Sharing food
  - ❑ Sharing personal items

- There is no cure for herpes, and once you have it, it is likely to come back. Some people may have one outbreak, and never have another one.
- In between herpes outbreaks, the virus lies dormant (as if it is hibernating or sleeping) in nerve cells. Often symptoms are triggered by exposure to sun, fever, menstruation, emotional stress, a weakened immune system or an illness.
- Although there is no cure, an infected person can take steps to prevent spreading the virus to others.
- Most herpes infections do not cause serious complications for healthy adults, but infections in infants and in people with weakened immune systems, or herpes infections that affect the eyes can be very dangerous and should be treated immediately with antiviral medication.
- Everyone is at risk for oral herpes from HSV-1. In fact, studies suggest that by adolescence, 62% of Americans are infected with HSV-1. By the time people are in their 60s, up to 85% have been infected.

# Cold Sores

## □ Signs and Symptoms

- Small, painful blisters filled with fluid around the lips or edge of the mouth
- Tingling or burning around the mouth or nose, often a few days before blisters appear
- Fever
- Sore throat
- Swollen lymph nodes in neck





# Cold Sores

## Prevention:

- ❑ There are a few things you can do to prevent yourself from getting a cold sore, or to stop the spread of cold sores to other people
- ❑ Avoid kissing people with visible cold sore
- ❑ Don't share personal items
- ❑ Avoid touching the sore directly with your hands
- ❑ Wash your hands!
- ❑ If you have a cold sore, be very careful touching your eyes and genitals, because you could spread the infection to other places
- ❑ If you have a cold sore, don't perform oral sex on your partner, because you could give them genital herpes
- ❑ Use sunscreen on your face if possible
- ❑ Reduce stress

# Cold Sores

- Treatment with antiviral cream
  - Wash your hands
  - Clean and dry the area of skin where you will be applying the cream
  - Put on gloves or use a cotton tip to apply a layer of cream to cover the skin where the cold sore has formed or seemed likely to form.
  - Rub the cream into the skin until it disappears
  - Throw away the gloves or cotton tip, do not use them again to get more cream out of the bottle
  - Leave the skin where you applied the medication uncovered. **Do not** apply a bandage or dressing
  - Wash your hands with soap and water
  - Be careful not to wash the cream off of your skin. **Do not** bathe, shower or swim right after applying cold sore cream.
  - Avoid irritation of the cold sore area while using the cream. **Do not** touch or scratch the area.
  - Follow these steps 5 times a day. If the cold sore has not cleared by 7-10 days, you should see a doctor.