1

Lecture 1 | Definition

2

Definition

- **Food supplements** are **concentrated sources** of **nutrients** or other **substances** with a **nutritional** or **physiological** effect, whose purpose is to **supplement** the **NORMAL DIET**.
- **Food supplements** are marketed in **dosage form**.
- FDA **regulates** both finished **dietary supplement (Dietary Supplement** Health and Education Act of 1994 (DSHEA))

3

Lecture 2 | Fasting

4

Fasting

- **Fasting refers to complete abstinence from food for a short or long period for a specific purpose**.
- The word is derived from the old English, ‘feastan’ which means to fast or be strict.
- **Hippocrates**, **Galen**, **Paracelsus** and many other great authorities on medicine prescribed it.
- **Fasting is just the process of purification and an effective and quick method of cure.**
- **The common cause of all diseases is the accumulation of waste and poisonous matter in the body which results from overeating.**

5

What happens during fasting?

The liver and muscles **store the glucose and release it into the bloodstream** whenever the body needs it. However, **during fasting**, this process changes.

Fasting mode then becomes the more serious starvation mode.

At this point, a person's **metabolism slows down**, and their body begins **burning** muscle tissue for energy.

6

The Five Stages of Intermittent (and Prolonged) Fasting (1)

- **By 12 hours, the body entered the metabolic state called ketosis. In this state, body starts to break down and burn fat.**
- Some of this fat is used by the liver to **produce ketone bodies**.
- Ketone bodies, serve as an alternative energy source for your brain cells *(promote mental clarity and positive mood)* and cells in other tissues when glucose isn't readily available.
- **ketones produce less inflammatory products**.

7

The Five Stages of Intermittent (and Prolonged) Fasting (2)

- **By 18 hours, the body switched to fat-burning mode and are generating significant ketones.**
- As this level in the bloodstream rises, **ketones can act as signaling molecu**les, similar to hormones, to communicate cells to rise up stress-busting pathways that **reduce inflammation and repair damaged DNA.**

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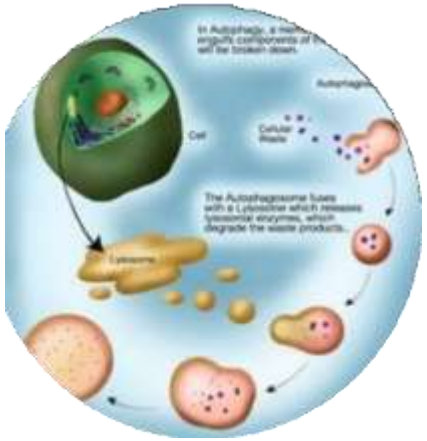

The Five Stages of Intermittent (and Prolonged) Fasting (3)

- **Within 24 hours, the cells are increasingly recycling old components and breaking down misfolded proteins linked to Alzheimer's and other diseases.**
- **This is a process called autophagy.**
- **Autophagy is an important process for cellular and tissue rejuvenation;**
- **It removes damaged cellular components including misfolded proteins.**

9

The Five Stages of Intermittent (and Prolonged) Fasting (4)

- **By 48 hours without calories or with very few calories, carbs or protein, the growth hormone level is up to five times as high as when the body started fasting.**
- Part of the reason for this is that **ketone bodies produced during fasting promote growth hormone secretion**, for example in the brain.
- The hunger hormone, also promotes growth hormone secretion.
- Growth hormone helps preserve lean muscle mass and reduces fat tissue accumulation, particularly as we age.
- It also appears to play a role in mammalian longevity and can promote wound healing and cardiovascular health.

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The Five Stages of Intermittent (and Prolonged) Fasting (5)

- **By 54 hours, insulin has dropped to its lowest level point since you started fasting and your body is becoming increasingly insulin-sensitive**
- Lowering insulin levels has a range of health benefits both short term and long term.
- Lowered insulin levels put a brake on the insulin and mTOR signaling pathways, activating autophagy.
- **Lowered insulin levels can reduce inflammation**, more insulin sensitive, **less insulin resistant**, which is especially a good thing if you have a high risk of developing diabetes and
- **Protect from chronic diseases of aging including cancer.**
- **By 72 hours, the body is breaking down old immune cells and generating new ones**

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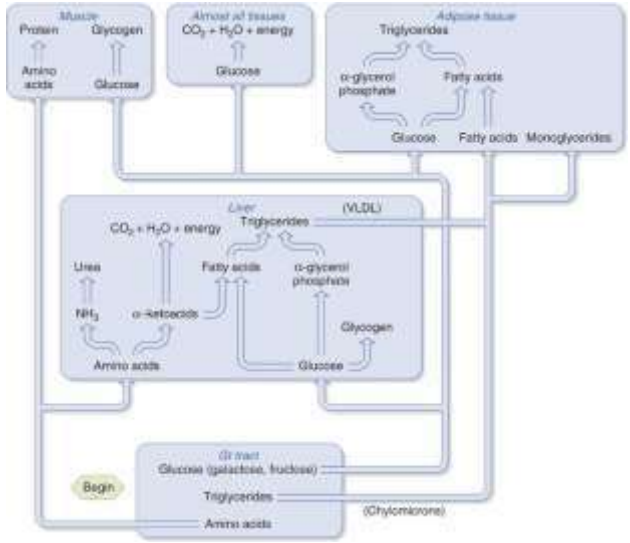
Absorptive (fed) state



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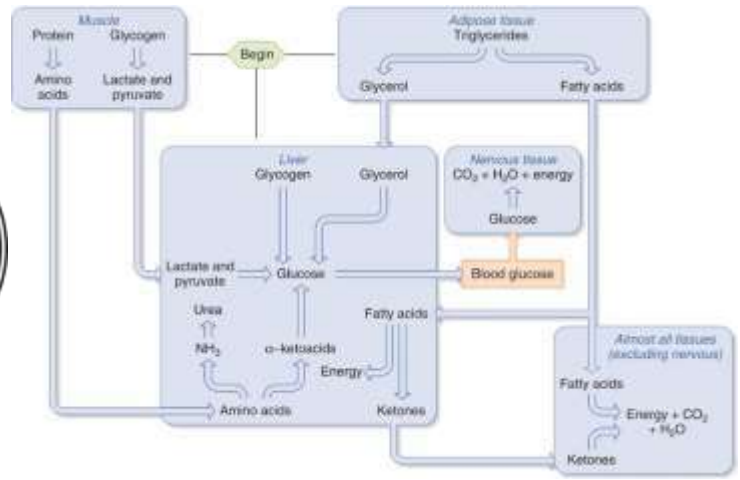
Postabsorptive (fasted) state



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Health Benefits of Fasting

- Promotes Blood Sugar Control by Reducing Insulin Resistance
- Promotes Better Health by Fighting Inflammation
- Enhance Heart Health by reducing triglycerides Levels
- Boost Brain Function and Prevent Neurodegenerative Disorders
- Aids Weight Loss by Limiting Calorie Intake and Boosting Metabolism
- Increases Growth Hormone Secretion
- Could Delay Aging and Extend Longevity
- Aid in Cancer Prevention and Increase the Effectiveness of Chemotherapy.

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Duration of Fasting

- The duration of the fast depends upon the:
  - **Age** of the patient,
  - the nature of the **disease** and
  - the amount and type of **drugs** previously used.

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Eight ways to do fasting

- **Fast for 12 hours a day (12:12)**
- **Fasting for 16 hours (8/16)**
- **Fasting for 2 days a week (5:2)**
- **A weekly 24-hour fast (6:1)**
- **Fasting for 3 days a month (27:3)**
- **Alternate day fasting (1 by 1)**
- **Meal skipping**
- **The Warrior Diet (4/20)**

How to Start Fasting

- **Water fasting:** Involves drinking only water for a set amount of time.
- **Juice fasting:** Entails only drinking vegetable or fruit juice for a certain period.
- **Intermittent fasting:** Intake is partially or completely restricted for a few hours up to a few days at a time and a normal diet is resumed on other days.
- **Partial fasting:** Certain foods or drinks such as processed foods, animal products or caffeine are eliminated from the diet for a set period.
- **Calorie restriction:** Calories are restricted for a few days every week.

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How to stop fasting

- Don’t overeat
- Don’t consume extra or empty calories
- Don’t consume white sugar
- Keep hydrated
- Eat less carbohydrates
- Take several days for the gradual change to the normal diet.
- Keep Exercise Mild

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Lecture 3 | Chromotherapy

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Definition

Chromotherapy is a method of treatment that uses the **visible spectrum (colors) of electromagnetic radiation** to cure diseases. It is a centuries-old concept used successfully over the years to cure various diseases.

Chromotherapy; an **alternate therapeutic system** or color therapy is the centuries old concept, which in order to correct the malfunctioning or ailments and diseases.

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- The goal is the process of **restoring balance** to the body by applying color.
- Color light therapy relies on the premise that each color is associated with a different bodily response.
- For example, **red** is typically associated with **stimulation**, while **blue** is considered a mentally relaxing color & **yellow** is the midpoint for **happiness**.

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Benefits of Chromotherapy

- *Reduced Swelling and Decreased Inflammation*
- *Pain Relief*
- *Accelerated Healing (Led Light)*
- *Increased Range of Motion*
- *Decreased Muscle Tension*
- *Improved Circulation*
- *Regulated Mood*
- *Improved Sleeping Patterns*
- *Anti-Aging Benefits*

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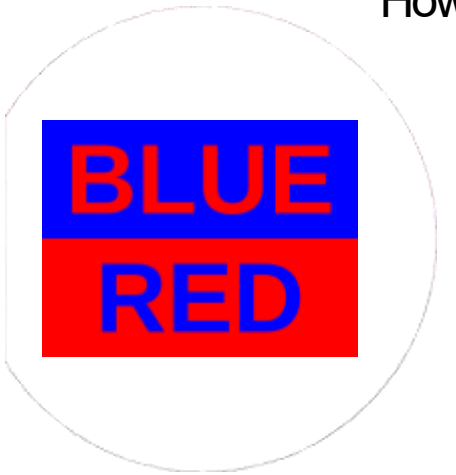

How to diagnose color deficiency?

- The deficiency is determined by observing the **color of the eyeballs, nails, urine and stool.**
- In cases of the **lack of red** **the eyes and nails will be bluish**, and the **urine and excrement white or bluish**.
- If there is a **deficiency of the blue** color, the eyes and nails will be **reddish** **and urine and stool yellowish or red.**
- **Every substance on earth contains color**. Even the rays cast on earth by celestial bodies contain color in the form of white light.
- **The rays of the sun contain 7 different colors violet, indigo, blue, green, yellow, orange and red.**

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- According to Dr. Babbit, a well-known authority on Chromotherapy, **"sunlight is the principal curative agent** in nature's laboratory.
- Sunlight plays an important role in the **recovery from chronic diseases**.
- The rays of the **sun improve digestion and nutrition, quicken blood and lymph circulation and increase the elimination of impurities through the skin**.

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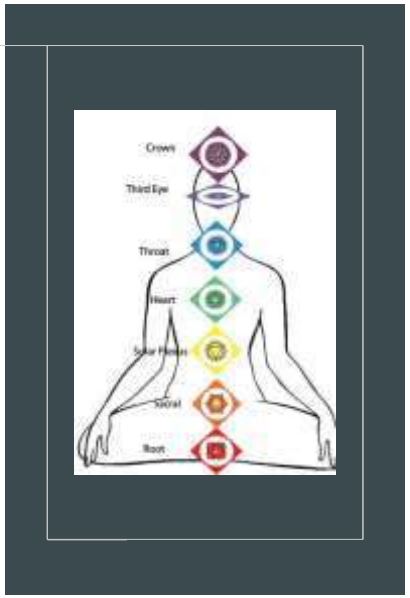
Sunlight

The action and effect of various colors on the body

- **Red**: Symbolic of heat, fire and anger. It is a stimulating and energizing color.
- **Orange**: Symbolic of prosperity and pride, orange is useful for stimulating blood supply and energizing the nerves. It is beneficial in the treatment of kidney and gall stones.
- **Violet**: Violet is beneficial in the treatment of nervous and emotional disturbances, arthritis, acute cases of consumption and insomnia.
- **Yellow**: Associated with pleasure and happiness, yellow is laxative and diuretic. It is a stimulant to the brain, the liver and the spleen.



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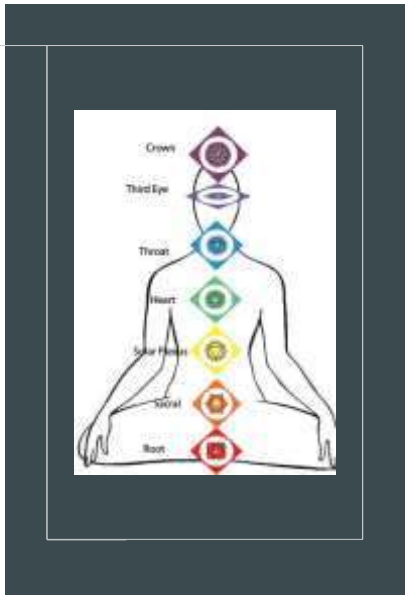
The action and effect of various colors on the body

- **Purple**: Purple or indigo combines the blood-warming red and the cooling antiseptic blue. It is an excellent stimulant without being an irritant. It is beneficial in the treatment disorders of the stomach, cataract, migraine and skin disorders.
- **Green**: Made up of the blue and yellow, green is regarded as a color of harmony. It is a mild sedative.
- **Blue**: Cool, soothing and sedative, blue alleviates pain, reducing bleeding and heals burns. It is beneficial in the treatment of dysentery, colic, asthma, respiratory disorders, high blood pressure and skin aberrations.



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Methods of Treatment

- **Through Eyes**
  - One way to take advantage of light therapy is to view the color simply. Look at the color for a few minutes.
  - For example, if you have a lot of anxiety and need to calm down, blue might be a good color to use.
- **Via Color Therapy Equipment**
  - There are various kinds of color therapy equipment. Some of them can be made easily, while others can be ordered for a color therapist's use. This equipment uses the projection of colored light. Sometimes, the color is projected on a screen, and you look at it.
- **Via art therapy**
  - In art therapy, the client's use of orange might sometimes be an indication that the client suffered. **Gray** might show that they're feeling depressed, hopeless, or cut off from their emotions.

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Lecture 4 | pH in Therapy

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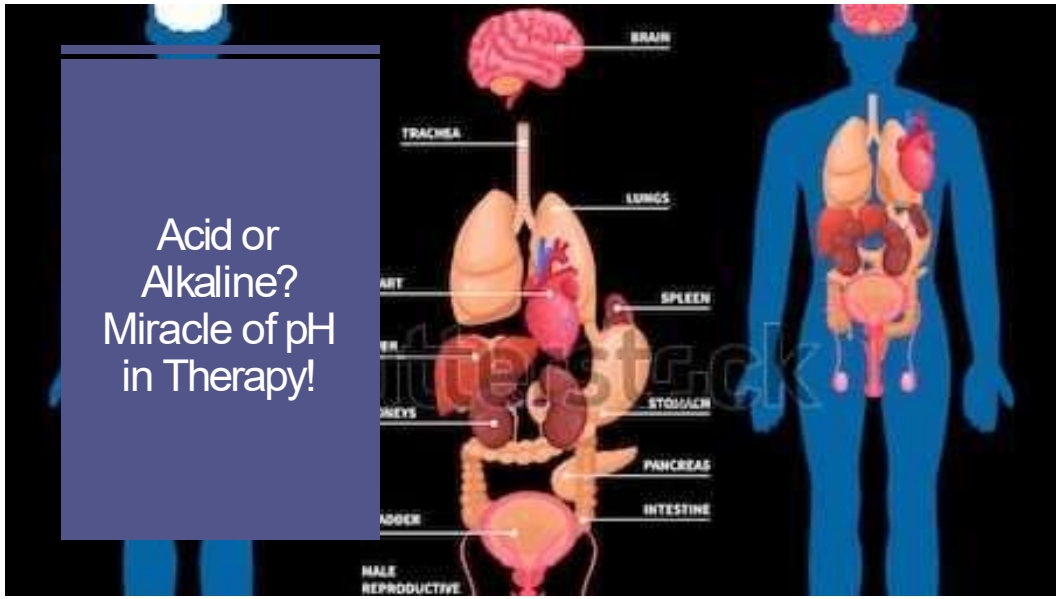
Acid or Alkaline? Miracle of pH in Therapy!



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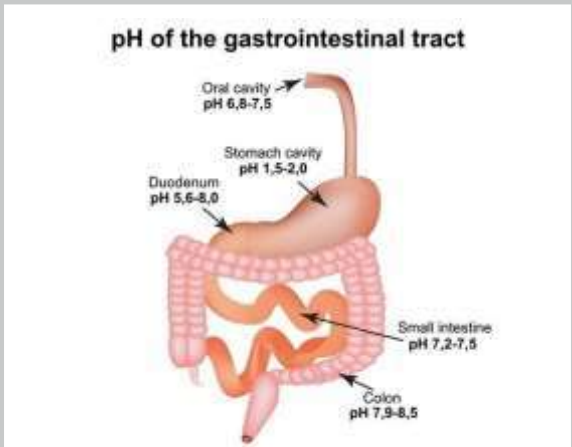
pH Values of the Body

- Each of our body fluids has its own optimal pH.
- **When the pH values are not within limits, it can be dangerous to the body.**
- Diseases have a more optimal environment; regulation of abnormal pH values can also lead to an improvement in health.

Brain	7.1
Oral cavity:	6.8 to 7.5
Stomach:	**1.2 to 3.0**
Duodenum:	5.6 to 8.0
Urine:	6.0 to 8.5
Sweat:	4.5 to 6.0
Liver:	7.1
Saliva:	6.5 to 7.5
Bile:	6.5 to 8.2
Body cells:	7.0 to 7.3
Blood:	7.35 to 7.45
Pancreas:	**8,0 to 8.8**
Small Intestine:	7.2 to 7.5
Colon:	**8.0 to 8.5**
Muscles:	6.9
Bone	7.4
Skin:	**4 to 6.5**
Vaginal fluid:	**3.8-4.5**
Sperm	7.2-8.0
Cerebrospinal fluid:	7.3
Intracellular fluid:	6.0 to 7. 2
serum venous	7.35
serum arterial	7.4
Prostate fluid	6.1-7.3



Possible reasons for over-acidity

- Nutrition (sugar, meat, coffee)
- Stress and anger
- Smoking
- Shallow breathing (often caused by lack of activity)
- An over-acidification of the body or an imbalance of the acid-base balance can be the cause for many symptoms and diseases, not only for **cancer**, such as **eczema** and other **allergies**, **autoimmune diseases**, **a disturbance of the intestinal environment.**

pH Balance

- The lungs and kidneys play a key role in this process.
- **The lungs control your body's pH balance by releasing carbon dioxide.**
- Carbon dioxide is a slightly acidic compound. It's also a waste product produced by cells in the body as they use oxygen.
- When you **breathe out**, you're expelling that carbon dioxide, a process that also helps regulate your body's pH balance by **reducing acidity**.
- The **brain** constantly monitors this in order to maintain the proper pH balance in the body.
- **The kidneys help the lungs maintain acid-base balance by excreting acids or bases into the blood**.

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pH Balance

- A blood pH imbalance can lead to two conditions: **acidosis and alkalosis.**
- There are **two types of acidosis**: **Respiratory** & **Metabolic** acidosis.
- **Respiratory acidosis**: asthma, obesity, sedative drugs, smoking, narcotics.
- Symptoms: fatigue & headache, tiered, shortness of breath.
- **Metabolic acidosis:**
  - Diabetic acidosis: (lack of insulin & ketones),
  - Hyperchloremic acidosis: (loss of sodium bicarbonate, Diarrhea & vomiting).
  - Lactic acidosis (heart failure-liver failure- lack of O_2- low blood sugar & cancer)
  - Renal tubular acidosis: when the kidneys are unable to excretes acids into the urine, as a results blood become acidic.
- Symptoms: Rapid breathing, confusion, lack of appetites, increase of heart rate

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Acidosis vs Alkalosis

- **Acidosis:** Whenever the alkalinity of the blood is reduced, even slightly, its ability to transport the carbon dioxide gets reduced. This results in the **accumulation of acid in the tissues**.
- Its symptoms are **hunger**, **indigestion**, **burning sensation** and **pain** in the **pharynx**, **nausea**, **vomiting**, **headache**, various **nervous disorders** and **drowsiness**.
- **The main cause of acidosis or hypo-alkalinity of the blood is faulty diet, in which too many acid forming foods have been consumed, accuumulation of CO2 and accumulation of acetone bodies (starvation).**
- **Acidosis is the background for most diseases**: Nepthritis or Bright's disease, **rheumatism**, premature old age, **arteriosclerosis**, **high blood pressure and skin disorders.**

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Abnormality		pH	CO_2	HCO_3	Examples
Respiratory acidosis	Uncompensated	↓	↑	→	Severe Asthma
	Partially compensated	↓	↑	↑	Pneumonia
	Fully Compensated	→	↑	↑	Hypoventilation
Respiratory alkalosis	Uncompensated	↑	↓	→	Hyperventilation
	Partially compensated	↑	↓	↓	Panic attack
	Fully Compensated	→	↓	↓	Aspirin Poisoning
Metabolic acidosis	Uncompensated	↓	→	↓	Diabetic ketoacidosis
	Partially compensated	↓	↓	↓	Lactic acidosis
	Fully Compensated	→	↓	↓	Alcohol, salicylate
Metabolic alkalosis	Uncompensated	↑	→	↑	Loss of acid: severe vomiting Loss of potassium
	Partially compensated	↑	↑	↑	
	Fully Compensated	→	↑	↑	

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Lecture 5 | Inflammation / Infection

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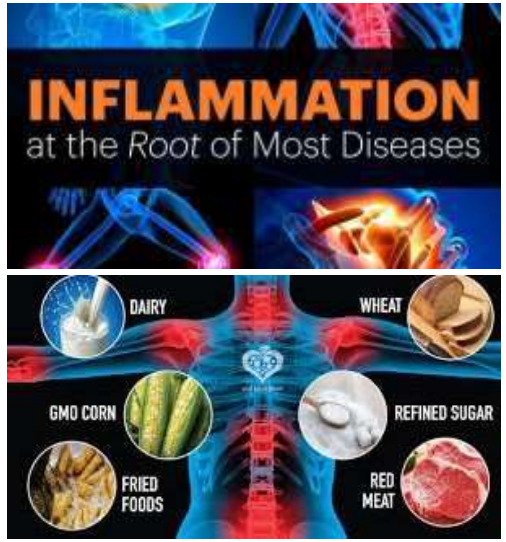

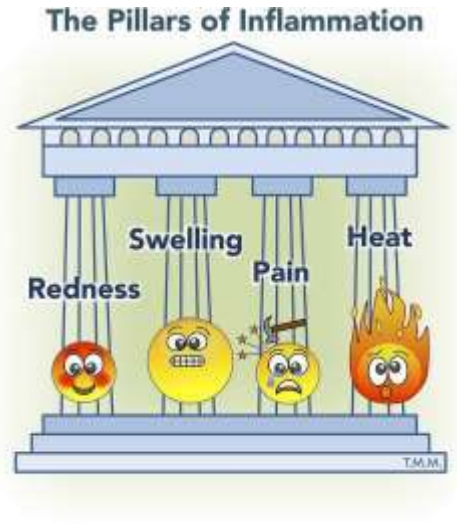

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Inflammation

Inflammation **generates** scar tissue in the lungs, joints, liver, etc.

When Patient go from acute inflammation to chronic inflammation, that's **when there is a problem**.

Chronic inflammation **doesn't do** the body any good.

Thus, it is crucial to learn **how** to reduce inflammation.

The longer there is inflammation in the body, the **more insulin resistance you'll have** as well.

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Inflammation has a few different purposes:

1. **Repair** - It brings all sorts of immune cells to help with reparative action.

2. **Defense** - A defense mechanism against Infection.

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1. Cortisol

- It is an adrenal hormone and it is supposed **to stop inflammation or inhibit inflammatory conditions**.
- Symptoms of high cortisol:
  - Belly fat
  - Major inflammation throughout the body
  - Sleep problems
  - High blood pressure
  - Gastric acidity / heartburn
  - Lowered immune system
  - Excessive thoughts
  - Low tolerance to stress
- There is a condition called cortisol resistance in which the receptor for cortisol is downgraded – which means it doesn't receive that well anymore.
- **When you have too much cortisol, it can produce a state where you get a lot of chronic inflammation because you developed the resistance.**

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Causes of Cortisol Resistance

- Chronic Stress
- Loneliness
- Losses
- Surgery / Trauma
- Mental Stress
- No Sleep at night

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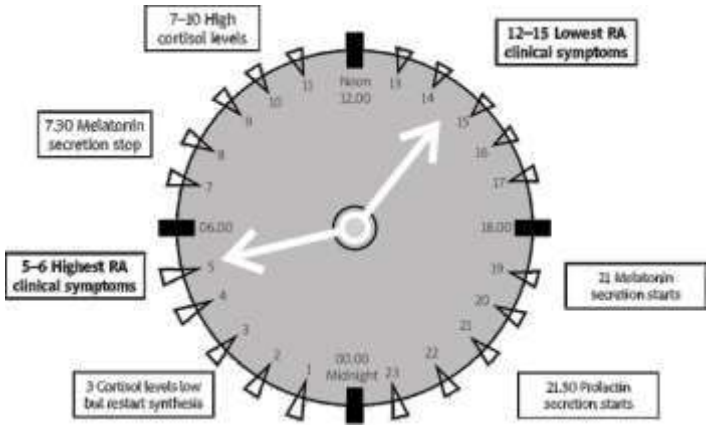
2. Chronic Infection

- Low cortisol and high susceptibility.



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3. Insulin Resistance

- It is a condition where you are producing too much insulin that excess amount causes a lot of inflammation in the body.
- It is triggered by the high carbohydrate/sugar diet and the frequency of eating.

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How to reduce inflammation?

- **Fasting** **turns off certain genes** related to inflammation.
- **Fasting** is the most powerful thing you can do to **turn off chronic inflammation**.
- **Fasting** **increases antioxidant network**.
- **Fasting** is very **therapeutic for the adrenal glands**.
- **Fasting** will cause **histamines to go down**.
- **Fasting** will cause **energy to go up**.

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Infection/Microorganisms

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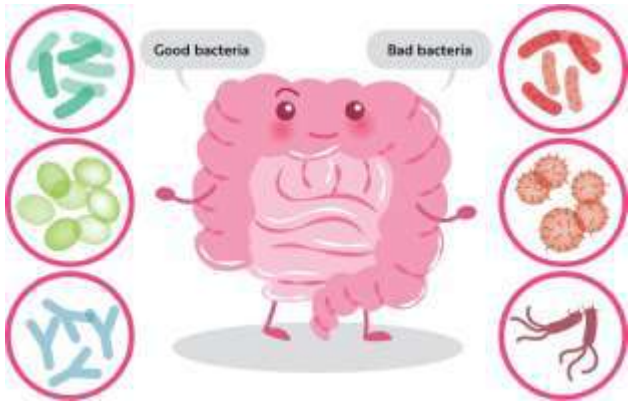
Lecture 6

Probiotics



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- **Probiotics** are bacteria that line of digestive tract and support the body's **ability to absorb nutrients and fight infection**. Able to help prevent and treat some illnesses. Promoting a healthy digestive tract and a healthy immune system.
- **Prebiotics** are **nondigestible** carbohydrates that **act as food for probiotics.**
- **Synbiotic** when probiotics and prebiotics are combined**,** such as **yogurt**.
- Digestive experts agree that the balance of gut flora should be approximately **85 percent good bacteria and 15 percent bad bacteria.**

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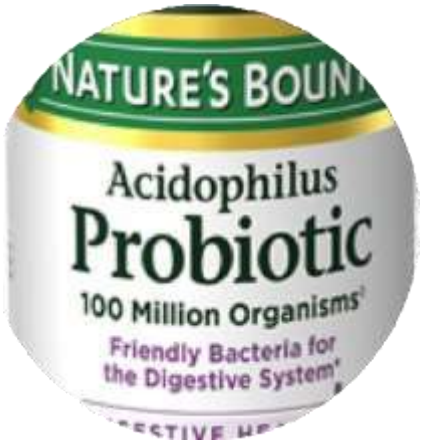
Common types of probiotics



- **Lactobacillus: present in** yogurt and other fermented foods (**Diarrhea**)
- **Bifidobacterium**: found in some dairy products (**IBS**)
- **Bifidobacterium bifidum:** the most dominant probiotic in infants and in the large intestine. **Supports production of vitamins in gut,** inhibits harmful bacteria, supports immune system response and prevent diarrhea.
- **Lactobacillus acidophilus: relieves gas, bloating, improves lactose intolerance**.
- **Lactobacillus bulgaricus:** a powerful probiotic strain that has been shown to **fight harmful bacteria** that invades your digestive system and is stable enough to withstand the acidic digestive juices of the stomach.

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Lecture 7
Antioxidants

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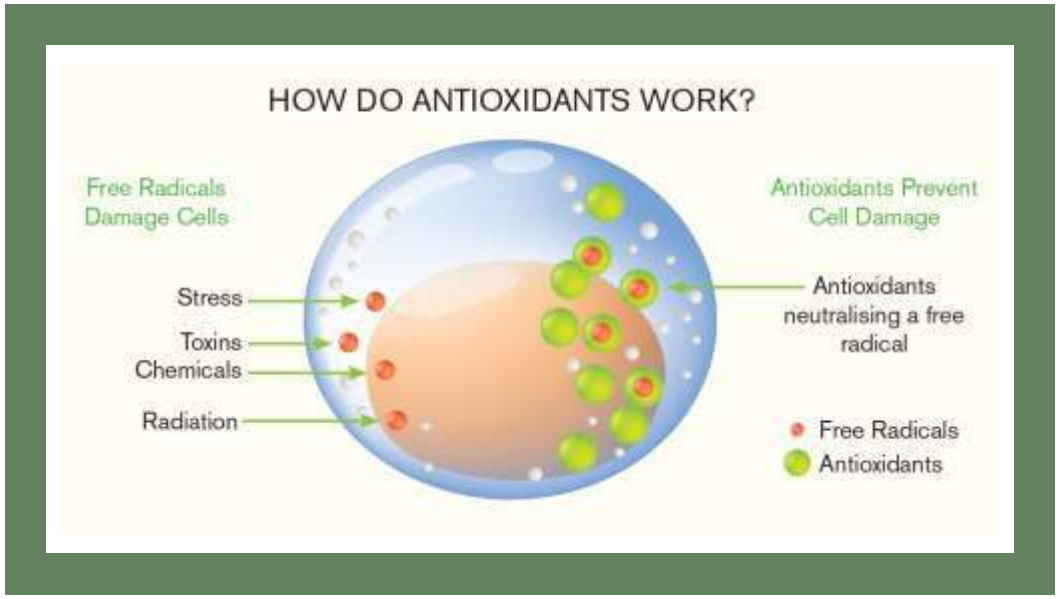
HOW DO ANTIOXIDANTS WORK?
Free Radicals Damage Cells
Antioxidants Prevent Cell Damage
Stress
Toxins
Chemicals
Radiation
Antioxidants neutralising a free radical
Free Radicals
Antioxidants

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Alpha lipoic acid (ALA)

- Is a fatty acid that exists in the mitochondria and is involved in energy metabolism.
- ALA gives a short but potent reduction of oxidation by increasing anti-oxidant enzymes and may decrease Blood Glucose acutely.
- Standard dose 600mg
- Indication
  - Symptoms of Diabetic Neuropathy
  - Blood Glucose
  - HbA1c
  - Glycemic Control
  - Insulin Sensitivity

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- **Play critical roles in reproduction, thyroid hormone metabolism, DNA synthesis, and protection from oxidative damage and infection.**
- ***Brazil nuts, Seafood's and organ meats are the richest food sources of selenium***
- **Skeletal muscle** is the major site of **selenium storage**, accounting for approximately 28% to 46% of the total selenium pool.
- selenium deficiency in combination with a second stress, cancer & male infertility.

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Omega-3 fatty acid

- Omega-3 fatty acids are considered essential fatty acids. They are necessary for human health, but the body can't make them.
- omega-3 fatty acids play a crucial role in brain function, as well as normal growth and development.
- Research shows that omega-3 fatty acids reduce inflammation and may help lower risk of chronic diseases such as heart disease, cancer, and arthritis.

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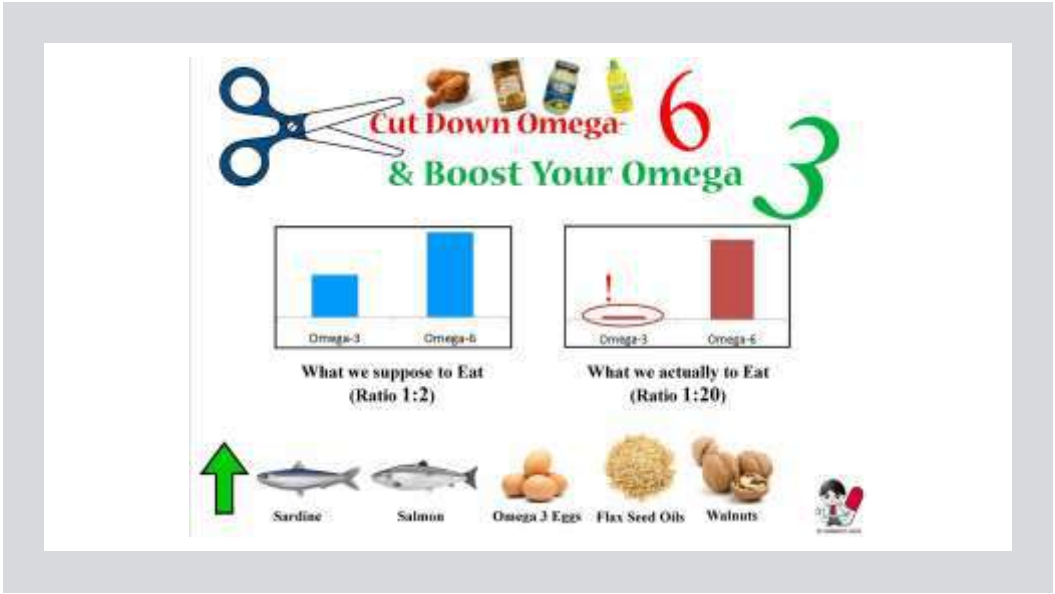

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Omega-3 Precautions

- Warfarin (Coumadin)
- Plavix
- Aspirin
- Garlic

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CO-Q-10

- **CoQ10** has been shown to help impr heart health and blood sugar regulat
- Assist in the prevention and treatme cancer and reduce the frequency of migraines.
- It could also reduce the oxidative da that leads to muscle fatigue, skin da and brain and lung diseases.
- It's involved in making adenosine triphosphate (ATP), which is involved energy transfer within cells.
- CoQ10 has been shown to improve insulin sensitivity and regulate blood sugar levels.

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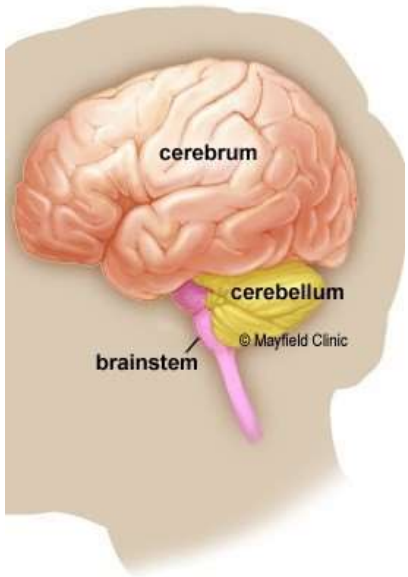

Overview

- **The brain is an amazing organ that controls all functions of the body, interprets information from the outside world, and embodies the essence of the mind and soul.**
- **Intelligence, creativity, emotion, and memory are a few of the many things governed by the brain.**
- **Protected within the skull, the brain is composed of the cerebrum, cerebellum, and brainstem.**

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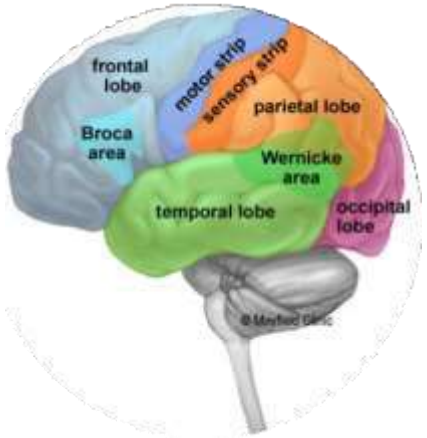

Lobs of the brain

Frontal lobe
- Personality, behavior, emotions
- Judgment, planning, problem solving
- Speech: speaking and writing (Broca's area)
- Body movement (motor strip)
- Intelligence, concentration, self awareness

Parietal lobe
- Interprets language, words
- Sense of touch, pain, temperature (sensory strip)
- Interprets signals from vision, hearing, motor, sensory and memory
- Spatial and visual perception

Occipital lobe
- Interprets vision (color, light, movement)

Temporal lobe
- Understanding language (Wernicke's area)
- Memory
- Hearing
- Sequencing and organization

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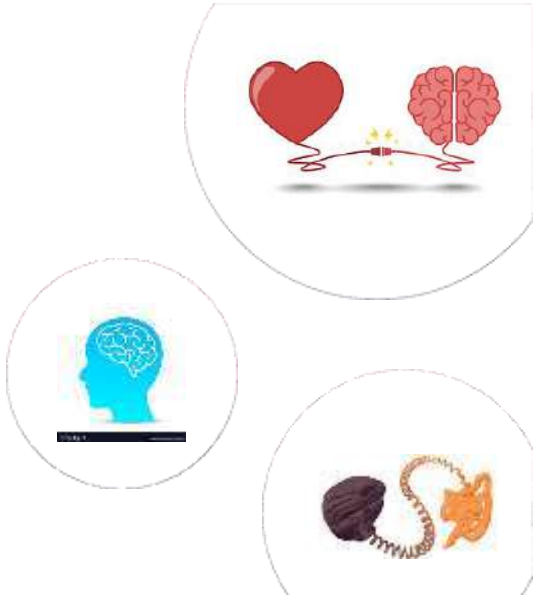
Functions of a Brain

- Attention and concentration.
- Self-monitoring.
- Organization.
- Speaking (expressive language) • Motor planning and initiation.
- Awareness of abilities and limitations.
- Personality.
- Mental flexibility.
- Inhibition of behavior.



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Memory

- **Memory** is our ability to encode, store, retain and later recall information and past experiences in the **human** brain.
- It is the ability to remember past experiences, and the power or process of recalling to mind previously learned facts, experiences, impressions, skills and habits.

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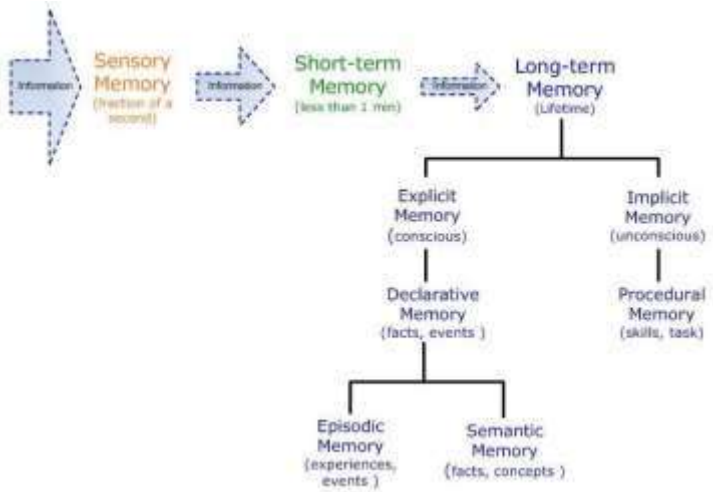
Types of Memory



Explanations for Why We Forget??

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- Four major reasons why people forget:
  1. **Retrieval failure:** One possible explanation of retrieval failure is known as decay theory. According to this theory, a memory trace is created every time a new theory is formed.
  2. **Failure to store:** Encoding failures sometimes prevent information from entering long-term memory.
  3. **Motivated forgetting:** Sometimes we may actively work to forget memories, especially those of traumatic or disturbing events or experiences or painful memories.

Explanations for Why We Forget??

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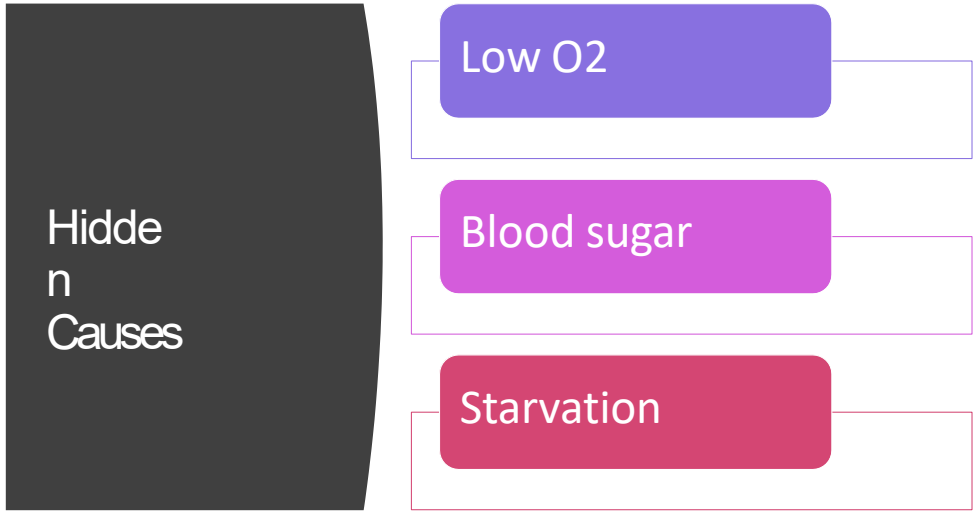
4. Interference:

When information is very similar to other information that was previously stored in memory, interference is more likely to occur.

- There are two basic types of interference:
  - **Proactive interference** is when an old memory makes it more difficult or impossible to remember a new memory.
  - **Retroactive interference** occurs when new information interferes with your ability to remember previously learned information.



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1. Brain fog
2. Headache
3. Memory problems
4. Decreased vision
5. Absent mindedness
6. Snoozing sleep

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1. Forgetfulness	2. Anxiety	3. Nervous	4. Irritable
5. Restlessness	6. Depression	7. Confusion	8. Obsessive-Compulsive Disorder (OCD)

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Therapy:

Lifestyle:

- Cut out all sugars and hidden sugars, Avoid Fast food as possible, Fasting, Water, Fatty fish, **Turmeric**, Broccoli, Dark Chocolate, Date, Pumpkin seeds, Nuts (almonds, cashews, walnuts and Brazil nuts and peanuts), eggs, green tea, Blueberries, Avocado, Sweet potato, Cacao, green juice, Lemon, Sage and fruity snack.

Nutrients:

- B12, Fe, Choline, omega 3, vitamin D, Co-Q-10, Resveratrol, Acetyl-L-Carnitine, Magnesium

Herbs:

- Ginkgo Biloba, Gotu Kola, Ginseng, **Turmeric**

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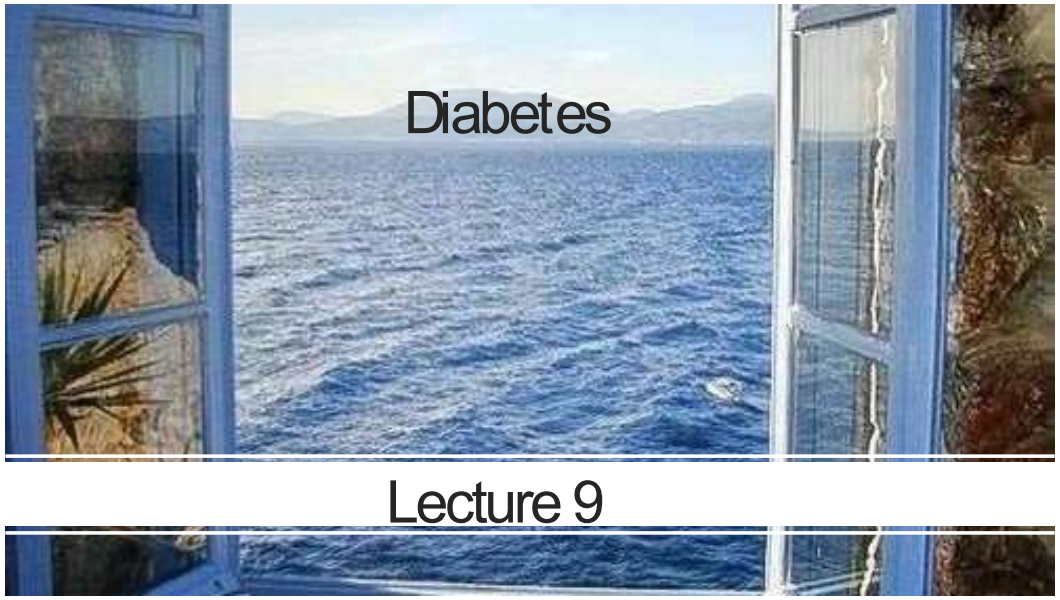

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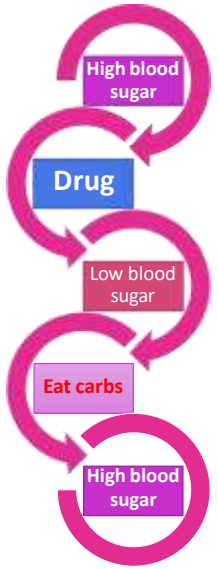
What is Diabetes?



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2000: WHO
Carbs 55%

2015: controlling sugars in food labelling

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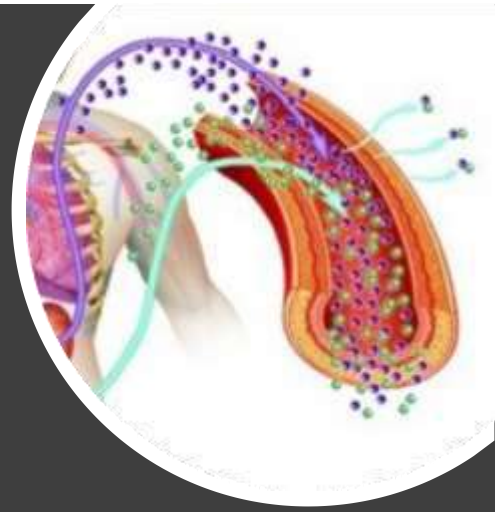
What is Insulin?

- Is a hormone mad by pancreas
- Main purpose is to lower blood sugar level
- **Allows cells to absorb glucose**
- **Stores sugars to fats**
- **Absorbs amino acids**
- **Absorbed potassium**
- **Block fat burn**
- **Retention sodium**
- **Detoxify access sugar**



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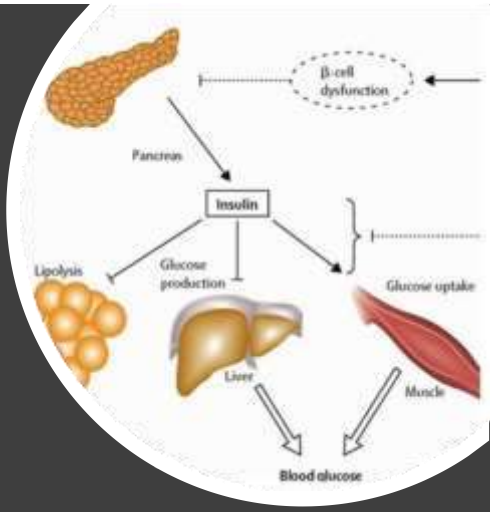
Insulin STIMULATED by

- **Sugars**
- **Frequency eating**
- **Cortisol**
- Protein
- Low Fat
- Mono sodium glutamate (MSG)
- Nicotine
- Caffeine



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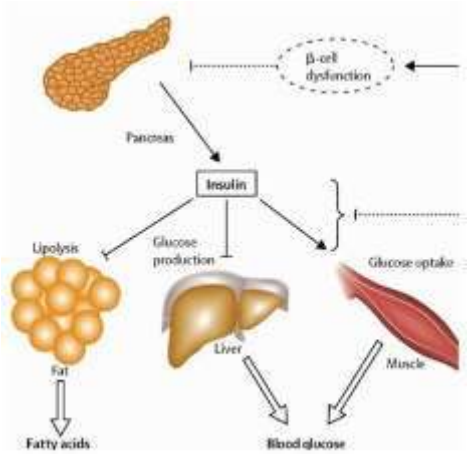
Insulin REDUCED by

- Fasting
- **Fat**
- **Vegetables**
- Fibers
- Apple cider vinegar
- Chromium
- High potassium
- Vitamin B1
- Lowering Cortisol
- Sleep enough at night



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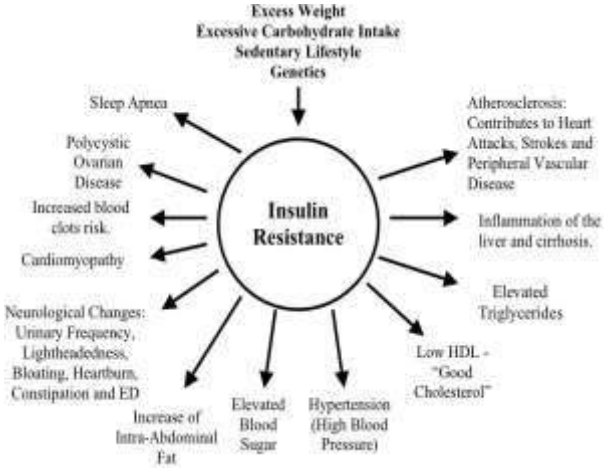
What is IR?

- Ketones are fat burning
- Body can make glucose from other sources that carbohydrate
  - Your own fat
  - Fat in the diet
  - Protein in the diet
  - It doesn't need external glucose
  - Fats are much cleaner fuel and much oxygen and less stressful
  - Metformin??????????
- **IR: IS A PROTECTIVE MECHANISM TO PROTECTIVE SUGAR FROM INVATON THE BODY**



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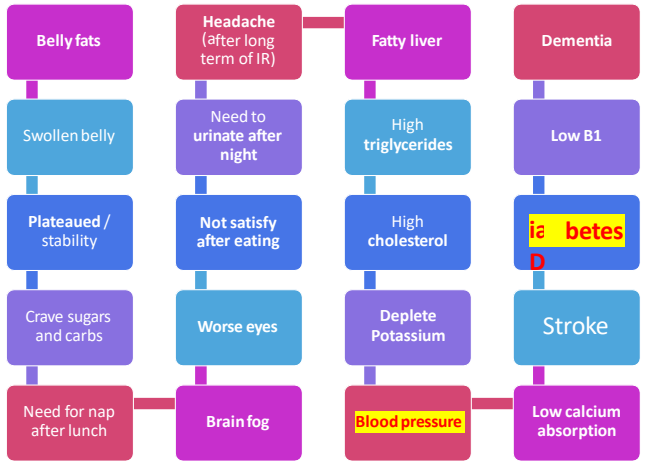
Symptoms of Insulin Resistance



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Monitoring & Follow-Up

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Biochemical

- **FBS**
- **HbA1C**
- **C-PEPTIDE**
- **Fasting Lipid Profile including HDL & LDL**
- ***H. pylori***
- **Electrolytes**
- **Thyroid gland**
- **Renal function**

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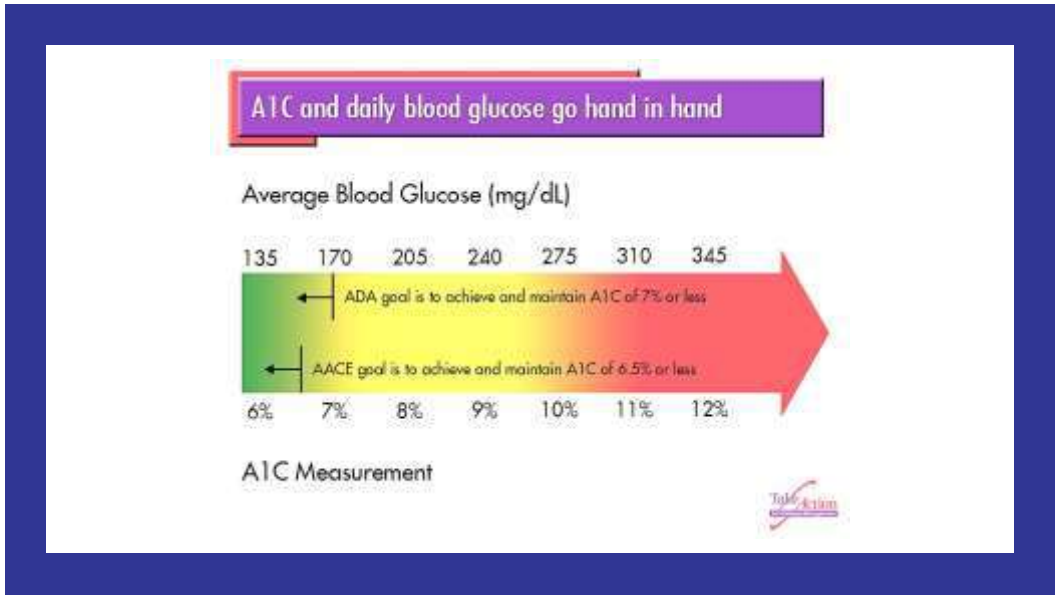
A1C and daily blood glucose go hand in hand
Average Blood Glucose (mg/dL)
135 170 205 240 275 310 345
ADA goal is to achieve and maintain A1C of 7% or less
AACE goal is to achieve and maintain A1C of 6.5% or less
6% 7% 8% 9% 10% 11% 12%
A1C Measurement

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Dose Adjustment For Normal Eating
Food
Activity
DAFNE

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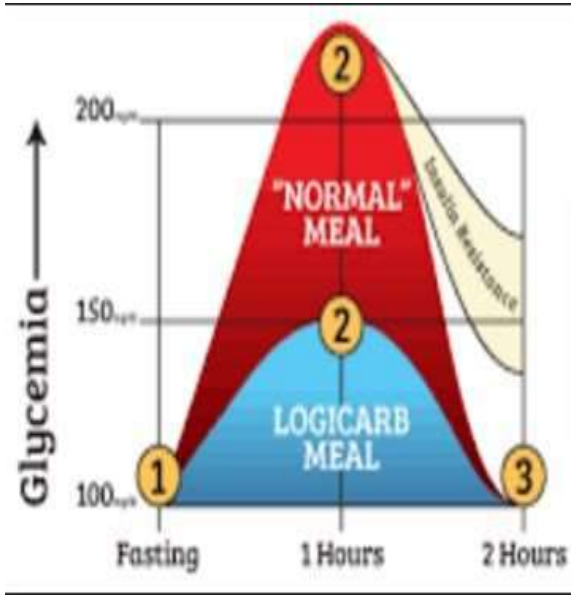

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High Gi 70 & Above High GL 20 & Above
Medium Gi 56 - 69 Medium GL 11 - 19
Low Gi 55 & Below Low GL 10 & Below

90

- **Glycemic index (GI)** and **glycemic load (GL)** offer information about how foods affect blood sugar and insulin.
- The **glycemic load (GL)** of food is a number that estimates how much the food will raise a person's blood glucose level after eating it.
- One unit of glycemic load approximates the effect of consuming one gram of glucose.

The Glycemic Load is the most practical way to apply the Glycemic Index to dieting, and is easily calculated by multiplying a food's Glycemic Index (as a percentage) by the number of net carbohydrates in a given serving. Glycemic Load gives a relative indication of **how much that serving of food is likely to increase your blood-sugar levels.**

$$GL = GI/100 \times \text{Net Carbs}$$

(Net Carbs are equal to the Total Carbohydrates minus Dietary Fiber)

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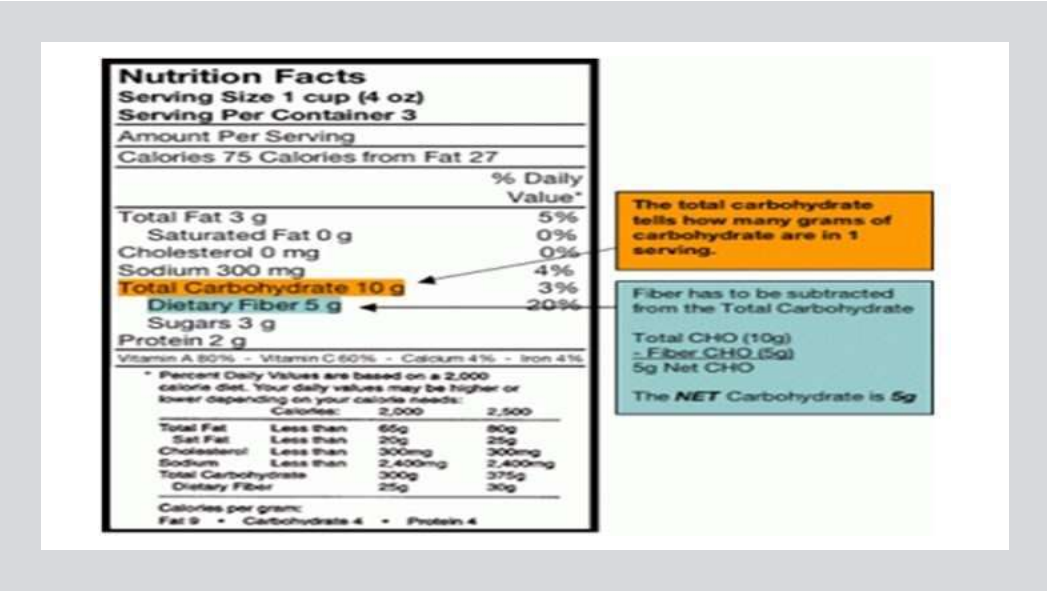

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Net carbs comparison, almond butter: UK (fiber already excluded) vs USA (fiber included in "total carbs")

Nutritional Information

Typical Values	Per 100g
Energy	681 calories
Protein	17.1g
Carbohydrates	5.8g
_of which sugars	3.9
Fat	65.6g
_of which saturates	4.9g
Fibre	10g
Sodium	Trace
Vitamin E	24mg
Biotin	0.073mg
Magnesium	154mg

Nutrition Facts

Serving Size 2 tablespoons (28g)
Servings Per Container 8

Amount Per Serving

Calories 200	Calories from Fat 160
	% Daily Value*
Total Fat 18g	28%
Saturated Fat 2g	10%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 0 mg	0%
Total Carbohydrate 6g	2%
Dietary Fiber 4g	16%
Sugars 1g	
Protein 7g	

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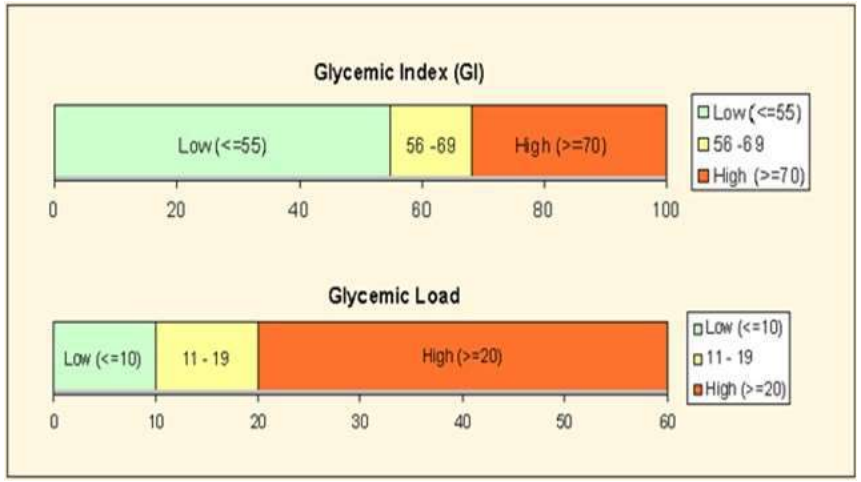

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Food	GI	Serving Size	Net Carbs	GL
Peanuts	14	4 oz (113g)	15	2
Bean sprouts	25	1 cup (104g)	4	1
Grapefruit	25	1/2 large (166g)	11	3
Pizza	30	2 slices (260g)	42	13
Lowfat yogurt	33	1 cup (245g)	47	16
Apples	38	1 medium (138g)	16	6
Spaghetti	42	1 cup (140g)	38	16
Carrots	47	1 large (72g)	5	2
Oranges	48	1 medium (131g)	12	6
Bananas	52	1 large (136g)	27	14
Potato chips	54	4 oz (114g)	55	30
Snickers Bar	55	1 bar (113g)	64	35
Brown rice	55	1 cup (195g)	42	23
Honey	55	1 tbsp (21g)	17	9
Oatmeal	58	1 cup (234g)	21	12
Ice cream	61	1 cup (72g)	16	10
Macaroni and cheese	64	1 serving (166g)	47	30
Raisins	64	1 small box (43g)	32	20
White rice	64	1 cup (186g)	52	33
Sugar (sucrose)	68	1 tbsp (12g)	12	8
White bread	70	1 slice (30g)	14	10
Watermelon	72	1 cup (154g)	11	8
Popcorn	72	2 cups (16g)	10	7
Baked potato	85	1 medium (173g)	33	28
Glucose	100	(50g)	50	50

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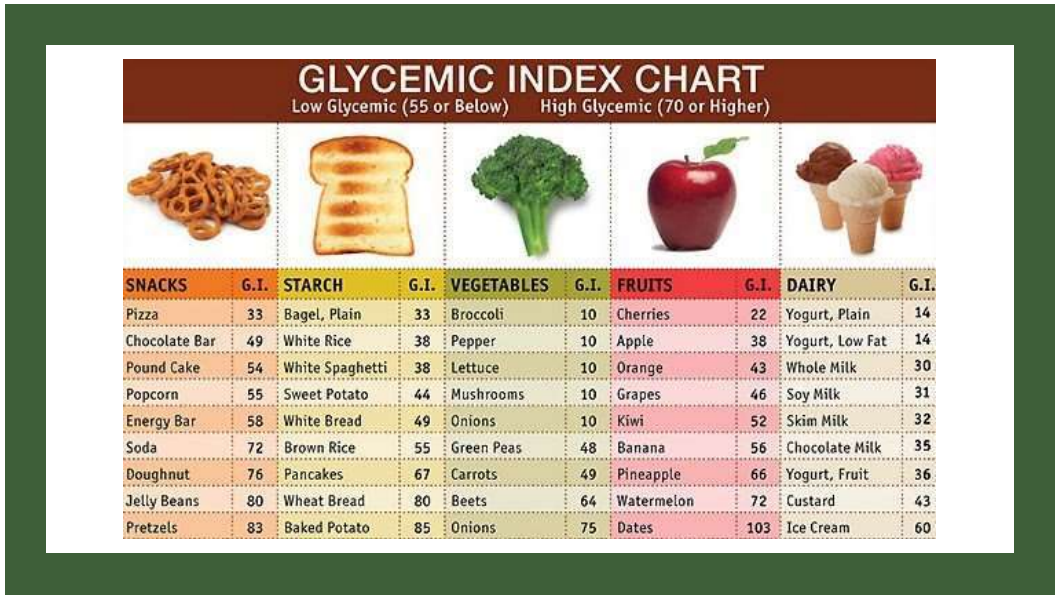
High Gi
70 & Above
High GL
20 & Above

Medium Gi
56 - 69
Medium GL
11 - 19

Low Gi
55 & Below
Low GL
10 & Below



SNACKS	G.I.	STARCH	G.I.	VEGETABLES	G.I.	FRUITS	G.I.	DAIRY	G.I.
Pizza	33	Bagel, Plain	33	Broccoli	10	Cherries	22	Yogurt, Plain	14
Chocolate Bar	49	White Rice	38	Pepper	10	Apple	38	Yogurt, Low Fat	14
Pound Cake	54	White Spaghetti	38	Lettuce	10	Orange	43	Whole Milk	30
Popcorn	55	Sweet Potato	44	Mushrooms	10	Grapes	46	Soy Milk	31
Energy Bar	58	White Bread	49	Onions	10	Kiwi	52	Skim Milk	32
Soda	72	Brown Rice	55	Green Peas	48	Banana	56	Chocolate Milk	35
Doughnut	76	Pancakes	67	Carrots	49	Pineapple	66	Yogurt, Fruit	36
Jelly Beans	80	Wheat Bread	80	Beets	64	Watermelon	72	Custard	43
Pretzels	83	Baked Potato	85	Onions	75	Dates	103	Ice Cream	60

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- **Watermelon** has a high GI, but a typical serving of watermelon does not contain much carbohydrate, so the glycemic load of eating it is low.
- watermelon has a GI of 80.
- A 100-g serving of watermelon has 5g of available carbohydrates making the calculation:

5x 80/100=4

so the **GL of watermelon is 4**

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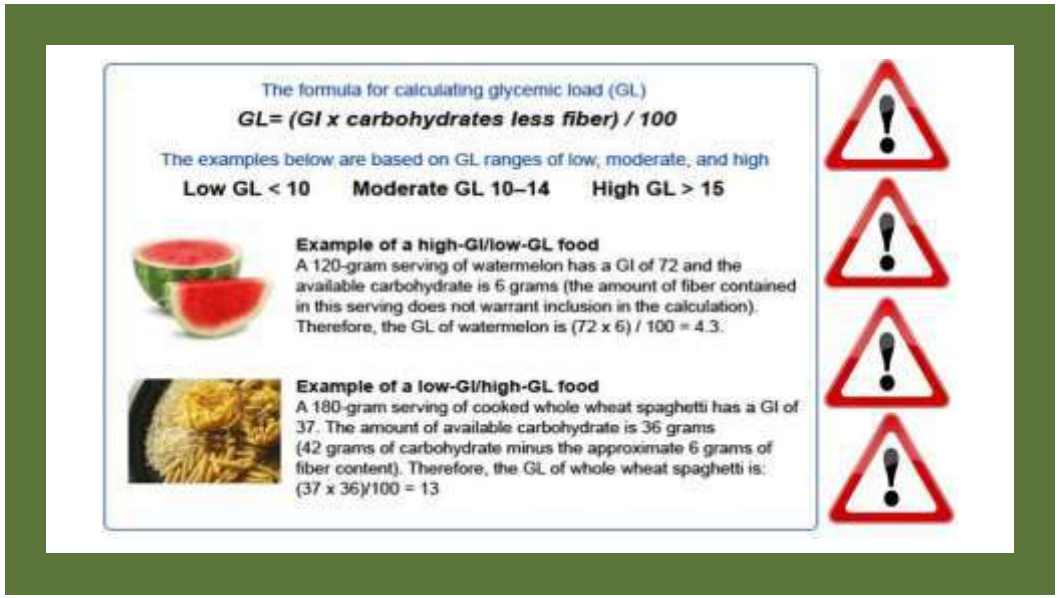

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WHAT?
WHERE?
WHEN?
WHO?
HOW?
WHY?
WHAT? HOW? WHY?
WHO? WHERE? WHAT? HOW?
WHO? WHOSE?
WHERE?
HOW? WHO?

100


NO SUGAR
Sugars Stimulate Hunger

101


Fruits
Grains
Dairy
Vegetables
Protein
Fatty Animal Protein
(Preferably grass fed, wild caught and free range. Include organ meats.)
Dairy
(Raw, full fat.) ~Optional~
Fruits, Nuts, Seeds
Vegetables
(Predominately cruciferous or leafy.)
Water

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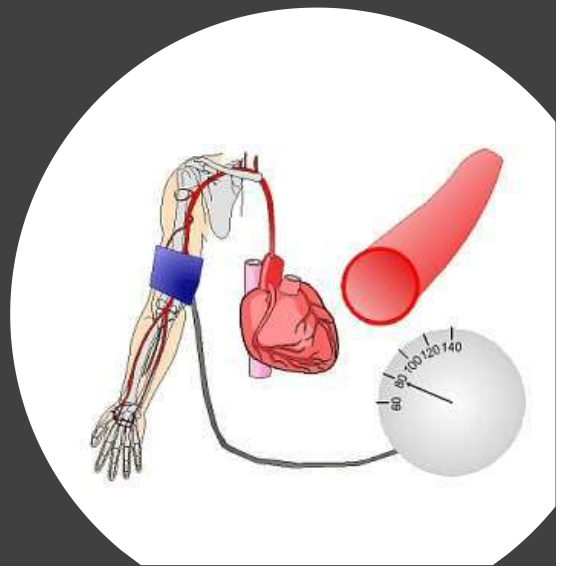
Lecture 10

Blood Pressure



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What is Hypertension?

Ability of heart to contract and heart ability to relax, so the contraction of the pressure called systolic, should be 120 and 80 is a diastolic for heart ability to relax.

Systolic controlled by sympathic nervous system and diastolic controlled by parasympathic control system

When have adrenal problems *(metabolic disorder, immune disfunction, stress)*, we have spike of systolic,

Pulse rate is ??

Main cause is low potassium, not because not eating enough potassium, but because of more sugar that deplete potassium, refined carbohydrates deplete potassium, cheesecake deplete potassium

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Blood Pressure

- **Blood pressure must be closely regulated for 2 reasons:**
  - **First**: It must be **high enough to ensure sufficient driving pressure**; without this pressure the brain and other tissues will not receive adequate flow.
  - **Second**: the pressure **must not be so high that it creates extra work for the heart and increase the risk of vascular damage and possible rupture of small blood vessels.**

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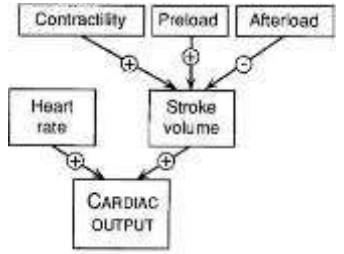
Blood Pressure =Physiology=

- **Mean arterial pressure depends on cardiac output and total peripheral resistance.**
- **Cardiac output depends on heart rate and stroke volume.**
- **Heart rate depends on the relative balance of parasympathic activity (decrease HR) and sympathic activity (Increase HR).**
- **Stroke volume increases in response to sympathetic activity.**
- **Venous return is enhanced by sympathetically induced venous vasoconstrictions.**
- **The skeletal muscle pump,**
- **The respiratory pump,**
- **And cardiac suction.**



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- High cholesterol
- High sugar
- Belly fat
- Insulin resistance
  - IR not risk factor/ not associated factor, no, <u>its cause</u>
  - IR make:
    - Stiff
    - Sodium retention
    - Low potassium



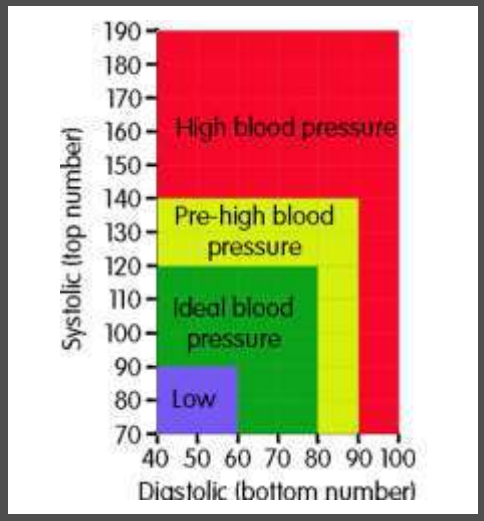
Causes

107

JNC 6 (1997)
- Optimal (120/80) Hypertension (140/90)

JNC 7 (2004)
- The risk of CVD beginning at 115/75 mmHg doubles with each increment of 20/10 mmHg
- Prehypertensive (120/80)

JNC 8 (2014)
- Less than 60 "Normal" (140/90)
- Over 60 "Normal" (150/90)



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- Heart failure patients with high systolic blood pressures had lower death rates.
- **Mortality rates were more than four times higher for those with systolic pressures of less than 120, in comparison to those who had pressure over 161.**
- These conclusions were gleaned from research on more than 48,000 heart failure patients seen at 259 U.S. hospitals between March 2003 and December 2004.

Journal of the American Medical Association
November 8, 2006; 296(18): 2217-2226

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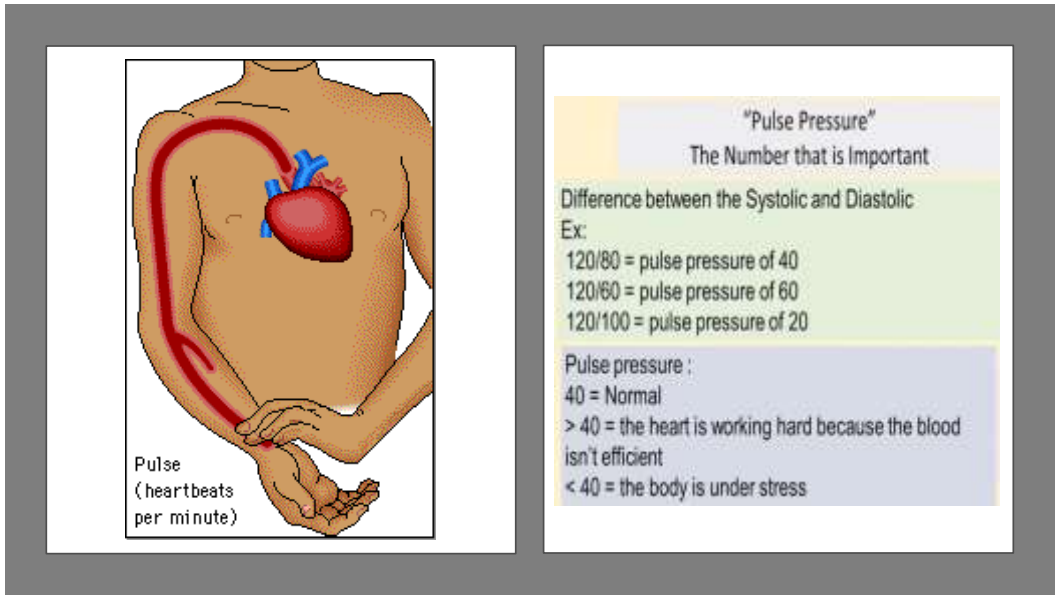

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What is the blood function?

Hypertension is a disease or Adaptive response?

What alter the physiological system?

Sugar vs. Salt: What's Worse for Blood Pressure?

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First Question:

- What is the blood function?
  - **transporting** oxygen and nutrients to the lungs and tissues.
  - forming blood clots to **prevent** excess blood loss.
  - carrying cells and antibodies that fight infection.
  - **bringing waste products** to the kidneys and liver, which filter and clean the blood.
  - **regulating body temperature**.
- **Blood pressure elevate to have the same function (TO ADAPT) before stressor event or toxic event**

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Third Question?

- **Why completely disfunction medical system? What alter your physiological system? What changes that?**

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4th Question:
Sugar vs. Salt:
What's Worse for Blood Pressure?

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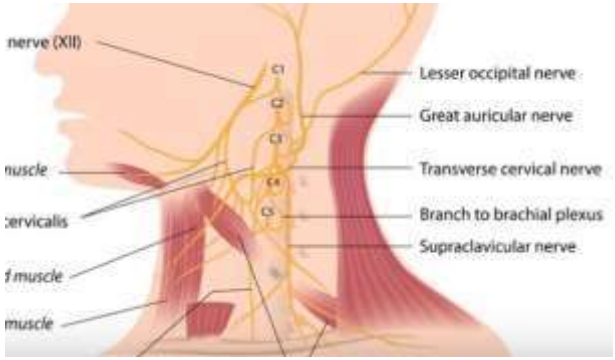

Remember

- Kidney damage causes high blood pressure **not high blood pressure causes kidney damage.**
- The nerves that originate from C3, C4 and C5 innervate the diaphragm.
- C3, C4, & C5 keep you a live!!!

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Chronic Stress Solutions
Physical
Emotional
Chemical
X-rays Spine
HRV
Posture analysis
Bunions
Exercise
Deep Breathing
NLP
100 things to D,B,B
Goals
Sleep Restriction
Exercise
Deep Breathing
Vaccinations – Chelation
Medications – Find the Problem
Plant based organic
Environmental – air filters, Water filters

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Food Supplements

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Supplements *for* Nervous System Health

- **Potassium:** regulate the electrochemical impulses of nerve cells.
- **Calcium:** help blood vessels expand and contract, to regulate nerve impulse transmission and hormone production.
- **B-Vitamins:** maintaining nervous system functions
- **5-HTTP:** increases the production of the chemical serotonin,
- **Magnesium:** improvements in synaptic functioning and neuronal signaling.
- **Essential Fatty Acids:** They aid in the transmission of the nerve impulses that guide our daily actions.
- **Chamomile:** able to change alpha-wave activity in the brain—the activity associated with deep relaxation.

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How can I prevent or manage high blood pressure?

- **Magnesium**: returning BP to normal levels has been proven to **regulate blood pressure**.
- **Omega-3 fatty acids**: able to reduce blood pressure by **reducing LDL** cholesterol.
- **Pyroloquinoline quinone**, or PQQ, is a pseudo-vitamin that can **boost metabolic efficiency** and **function**. PQQ helps lower blood pressure by **reducing the level of triglycerides** in the blood.
- **Vitamin D** may reduce the **risk of cardiovascular** disease and lower blood pressure
- ***Folate*** shown to **reduce the incidence of stroke with hypertension**.
- ***Coenzyme Q10*** **improve circulation** and blood pressure,

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- DASH recommends eating:
  - **Plenty of vegetables,**
  - **Fruits,**
  - **Whole grains,**
  - **Fat-free or low-fat dairy products,**
  - **Fish, poultry, beans,**
  - **Nuts, and vegetable oils;**
- DASH also recommends a maximum daily sodium intake of 2300 mg.
- Limiting sugar-sweetened beverages and sweets.
- Avoiding foods high in saturated fat (such as processed meat, full-fat dairy products, and tropical oils such as coconut and palm oils).

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A. **Mineralization**; osteomalacia/rickets
B. **Low** bone **mineral content**; osteoporosis; **O**steogenesis **i**mperfecta (Oi)
C. **High** bone **mineral** content; osteopetrosis; bisphosphonate; benign high bone mass
D. **High bone turnover** ***(Osteitis fibrosa)***; pagets; hyperparathyroidism
E. **Low bone turnover** ***(Osteomalacia);*** adynamic disease
F. **Fractures**

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Osteomalacia and Rickets

Osteomalacia	Rickets
Most Common • **Difficulty rising from a chair** • **Difficulty walking** **Additional Signs and Symptoms** • **Low back pain**, muscle weakness • **progressive deformities** • Weight loss	1. Vitamin D 2. Phosphate 3. Calcium 4. Acid 5. Alkaline Phosphate 6. Drugs and Toxins

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B. Low bone mineral content

Osteoporosis

- Decreased volume of mineralized bone tissue per unit of bone
- Cortical thinning and increased porosity
- Decreased number and thickness of trabecular
- Decreased bone strength
- Increased risk of fracture

- **Generalized**
  - Cortical
  - trabecular
- **Localized**
  rheumatoid arthritis
- **Bone marrow disease**
  myeloma
  secondary cancer
  lymphoma

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C. High Bone Mineral Content

- Osteopetrosis
- Bisphosphonate Treatment *bisphosphonates increase bone thickness and may lower the risk of fractures*
- Fluorosis
- Benign High Bone Mass

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D. High-Turnover Metabolic Bone

- High-turnover bone disease is the result of the development of **secondary hyperparathyroidism**.
- Factors involved in the pathogenesis of secondary hyperparathyroidism are:
  - **Retention of Phosphorus**
  - **Hypocalcemia**
  - **Decreased renal synthesis of 1,25-dihydroxycholecalciferol (1,25-dihydroxyvitamin D, or calcitriol)**
  - Intrinsic alterations within the Parathyroid gland that give rise to **increased PTH secretion** as well as **increased parathyroid growth**, skeletal resistance to the actions of PTH and hypocalcemia.

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E. Low-Turnover Metabolic Bone Disease

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- **High bone turnover**
  - Pagets
  - Hyperparathyroidism (Renal failure/ cancer)
  - Osteomalacia and rickets
  - Thyrotoxicosis *(excessive quantities of THYROID HORMONES- Graves' disease)*
  - Hypogonadism *(a diminished functional activity of the gonads – the testes and ovaries in males and females, respectively – that may result in diminished sex hormone biosynthesis).*
- **Low bone turnover**
  Adynamic bone disease;
  Hypophosphatasia

F. Fracture Risk

- **Trauma:** (Fracture- any break in bone)
- **Age-related**
- **Decreased bone strength**

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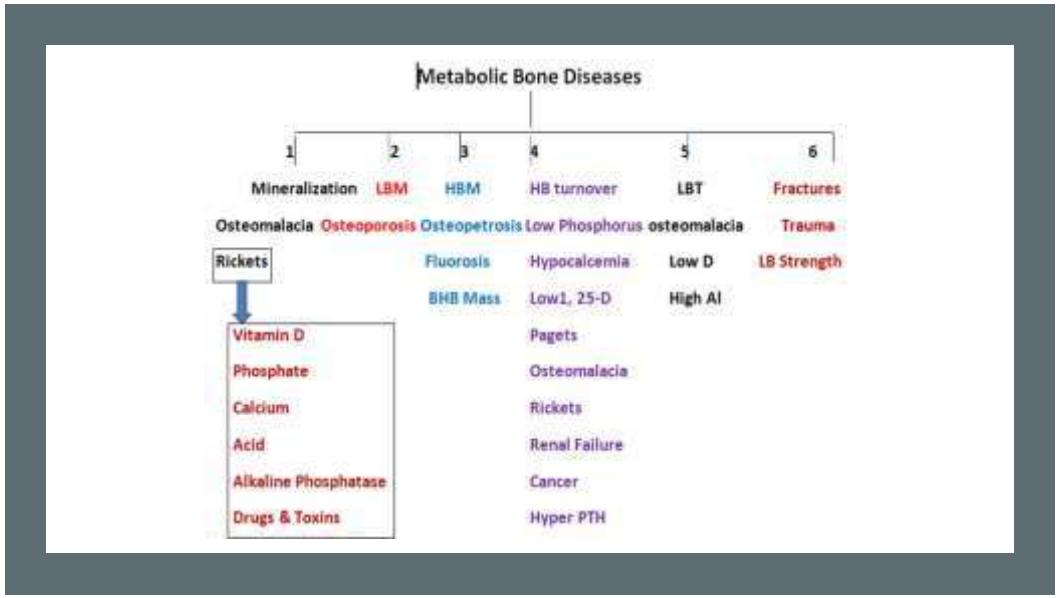

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Conclusion

Diseases	Analysis
• Osteoporosis • Osteomalacia • Rickets • pagets; • Hyperparathyroidism • Cushing's Disease • Bone Marrow Disease • Thyrotoxicosis • Hypogonadism	• Calcium • PTH • Alkaline Phosphatase • Phosphorus • 25-OH-D • 1,25 OH-D • HCO3

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Normal Range

No.	Test	Normal Range
1.	T. Calcium	**8.5-10.2 mg/dL**
2.	Calcium ionized	**4.5-5.6 mg/dL**
3.	PTH	**10-65 ng/L**
4.	Phosphorus	**2.5 to 4.5 mg/dL**
5.	Alkaline Phosphatase	**Adults: 25-100 (U/L)** **Children: Less than 350 U/L**
6.	25-OH-D	**20 to 50 ng/mL** **12 to 20 ng/ml at risk** **Less 20 ng/ml vitamin D deficiency**
7.	1,25 OH-D	**<16 years: 24-86 pg/mL** **> or =16 years: 18-64 pg/mL** **(female: 18-78 pg/mL)**
8.	HCO3	**22–26 mmol/L**

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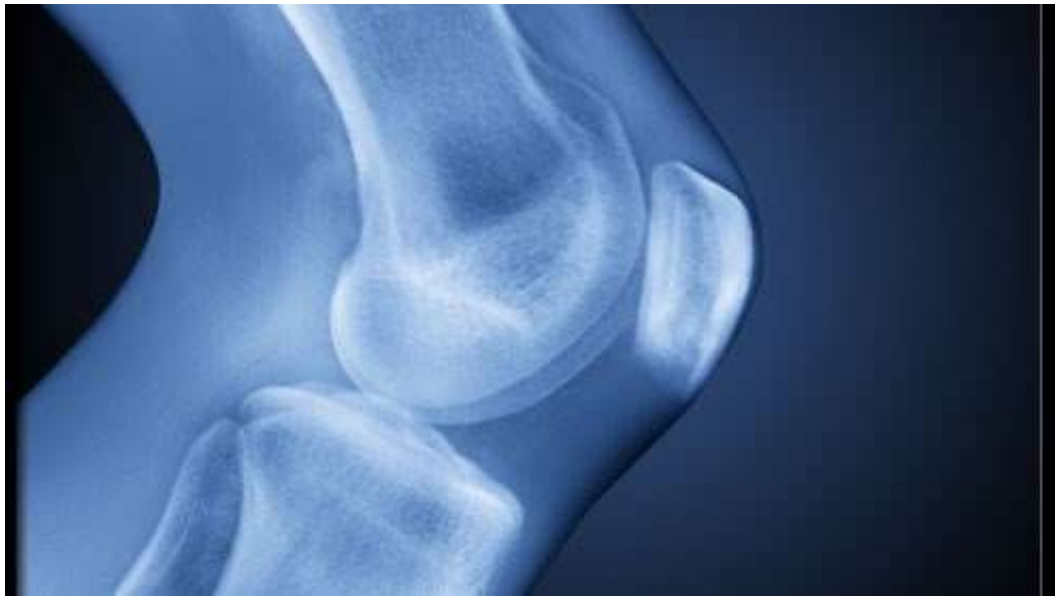
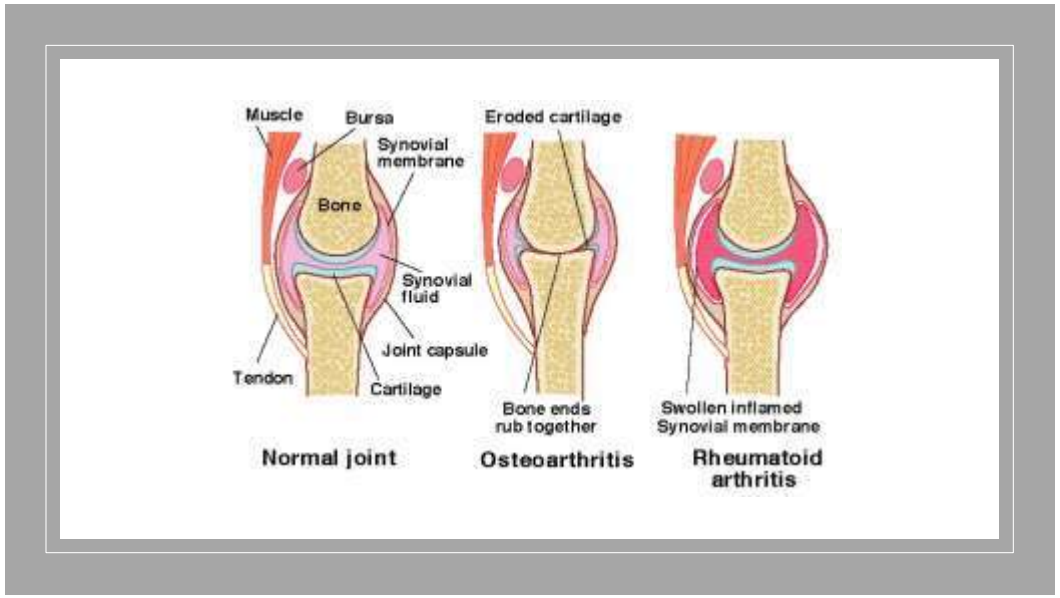


137


Muscle
Bursa
Synovial membrane
Bone
Synovial fluid
Joint capsule
Tendon
Cartilage
Normal joint
Eroded cartilage
Bone ends rub together
Osteoarthritis
Swollen inflamed Synovial membrane
Rheumatoid arthritis

138

Osteoarthritis is a joint inflammation that results from **<u>cartilage degeneration</u>**, mainly a **non-inflammatory** disease of synovial joints.

There is no blood test for the diagnosis of osteoarthritis.

139

Classification

Primary	Secondary
• Un-known • Aging process • Obesity • Trauma (occupation) • Genetics • Water content of the cartilage increases, and the protein makeup of cartilage degenerates..	• Trauma • Previous joint disorder • Congenital hip dislocation • Infection: Septic arthritis, • Inflammatory: RA • Metabolic: Gout • Hematologic: Hemophilia • Endocrine: DM • **Hyperthyriodism** • **Repeated trauma or surgery to the joint**

140

Collagen	**Proteoglycan**	- Hyaluronic acid
- Glycoseaminoglycan	Water	**Condrocyte**

141

Chondroitin is a naturally occurring substance formed of **sugar chains**. Chondroitin help the body maintain fluid and flexibility in the joints. **Glucosamine** is **sugar protein** that help develop and renew cartilage (the hard connective tissue mainly located on bones near joints in the body), and keep it lubricated for better joint movement and flexibility.

142

Joint pain - degenerative	Stiffness following inactivity – 30 min	Crepitus *(crackling or popping sounds)*	Limitation of Range of Motion (ROM) – later stages (Restricted movement)
Deformity	Muscle weakness or wasting	Joint effusion *(an increased amount of fluid within the synovial compartment of a joint).*	Joint enlargement and instability

143

A full blood count and the erythrocyte sedimentation rate (ESR) are usually normal, but these measures can be important to rule out other inflammatory conditions.

X-rays may show narrowing of the joint space (from cartilage loss), bony outgrowths, thickening of the bone under the cartilage, joint misalignment or cyst formation.

An MRI (magnetic resonance imaging) scan can demonstrate early changes in the cartilage that cannot be seen on X-ray, and changes in other joint structures such as bones and ligaments.

144

145

Primary Prevention of Osteoarthritis

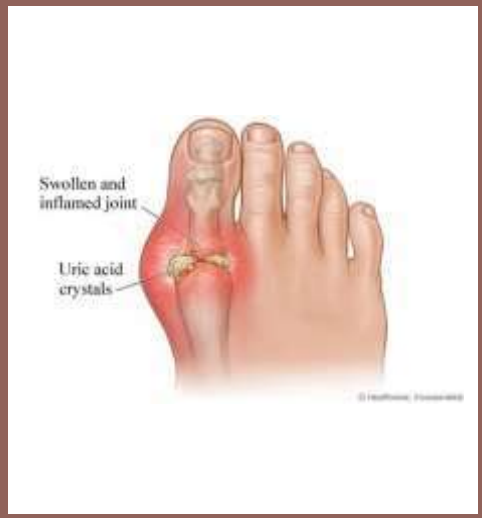
Regular exercises

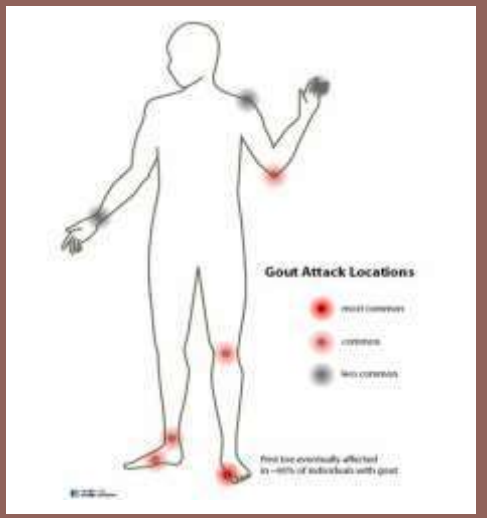
Weight control

Prevention of trauma

146

147


Swollen and inflamed joint
Uric acid crystals


Gout Attack Locations

148

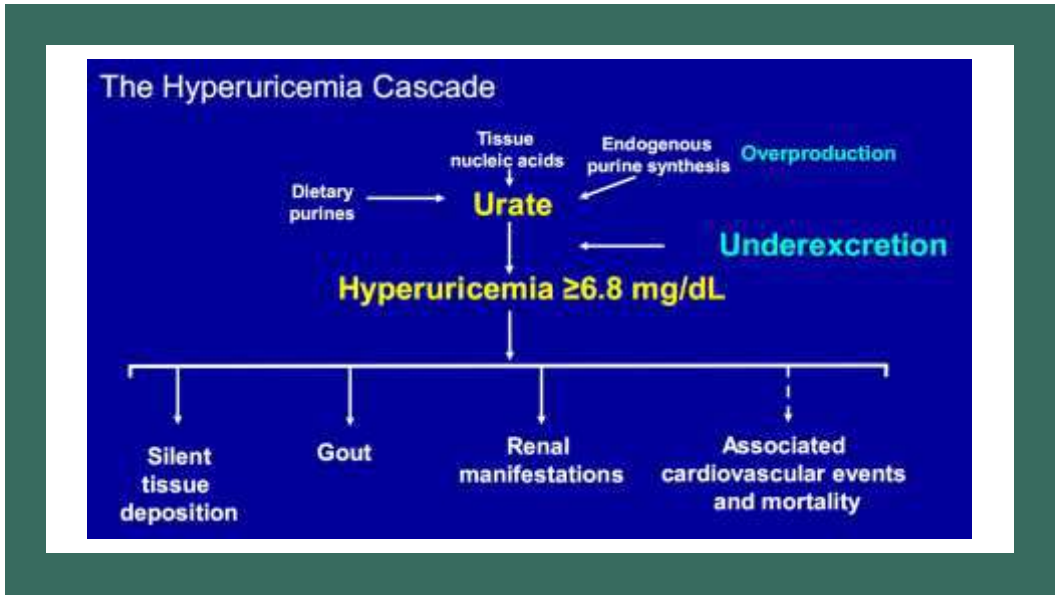
GOUT

2640 BC: podagra first identified by the Egyptians

– 5th century BC: Hippocrates referred to gout as **"unwalkable disease"** and noted links between **gout & lifestyle**, demographics & other variables

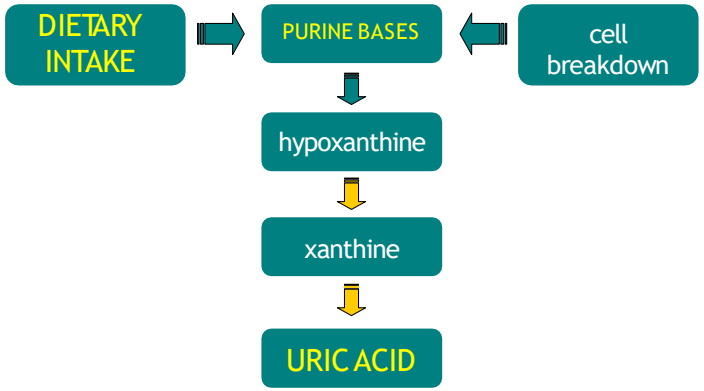
Gout is heterogeneous disorder of urate metabolism

149



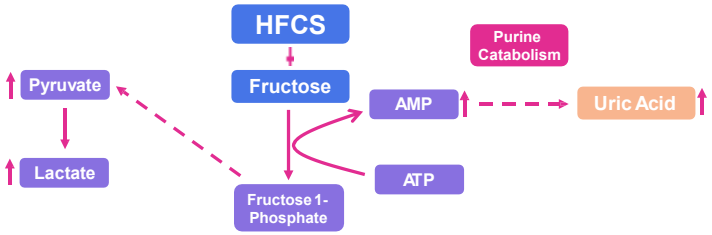
150

Uric Acid Metabolism



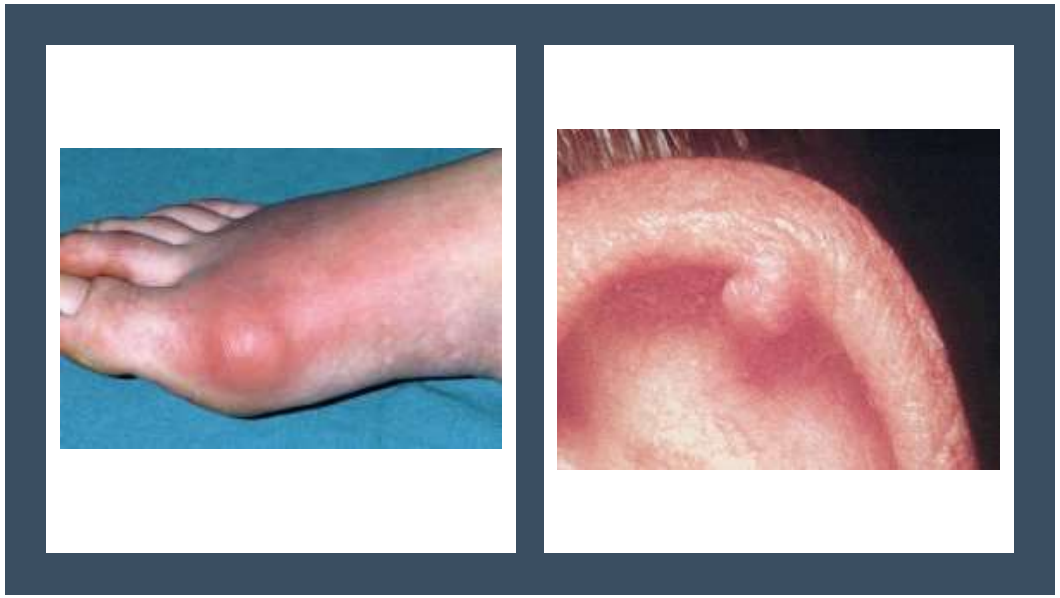
151

Fructose Intake and Urate Excretion



- Dominant dietary source – high-fructose corn syrup (HFCS)
- High concentration of fructose causes rapid accumulation of AMP
  - Increases the body pool of purines
- Lactic acid is a by-product of fructose metabolism
  - Lactate decreases urate excretion

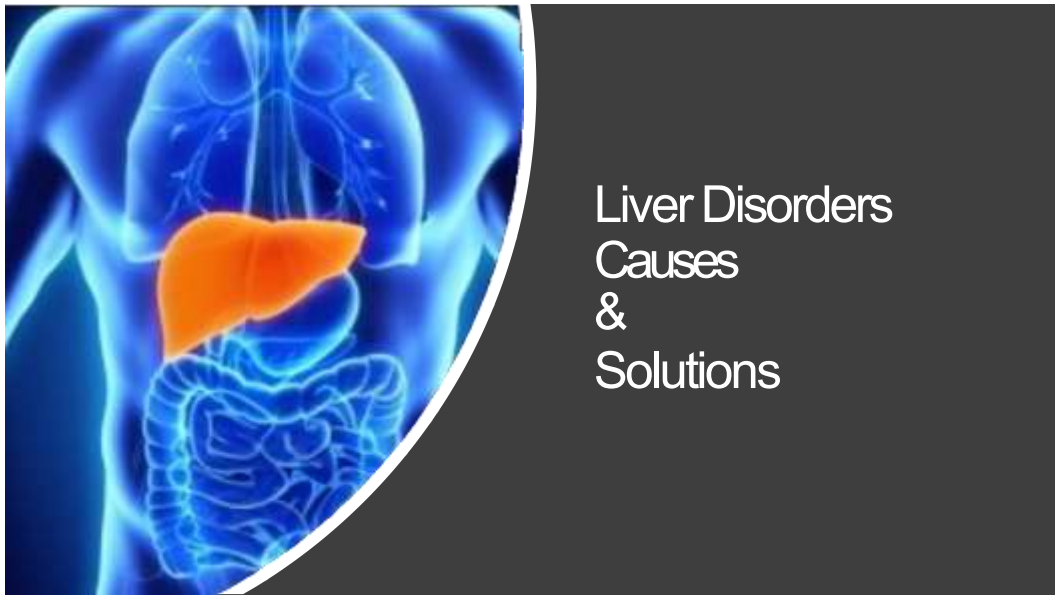
152



153

High Purine Diet	Moderate Purine Diet	Low Purine Diet
Yeast	Meat	Eggs
Fish	Chicken	Cheese
Internal organs (Liver/spleen)	Vegetables	Milk/Tea
Duck	Legumes	Beverages
pigeon	AVOCADO Coffee	Fruits

154

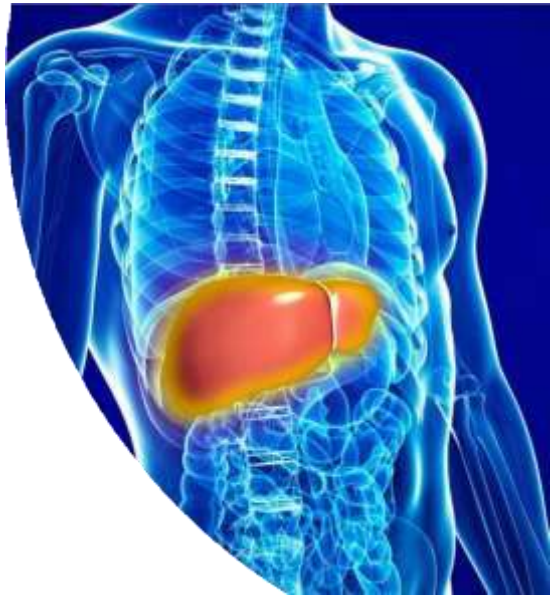


Liver Disorders Causes & Solutions

155

The Liver

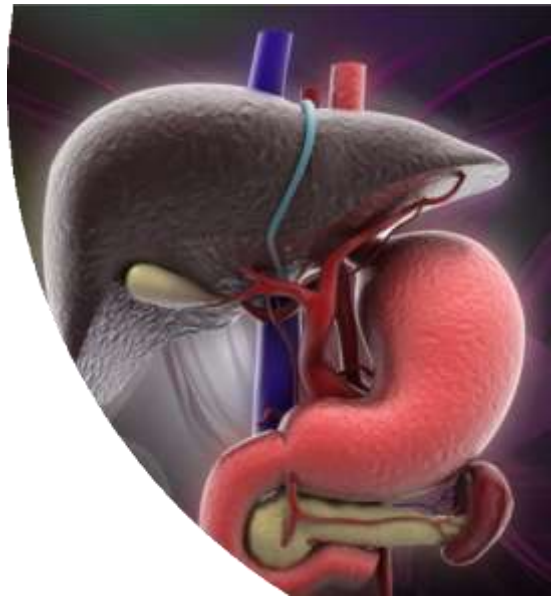
- The liver is a half-moon shaped organ that's straight on the bottom.
- It's tilted slightly in the body's cavity, with the left portion above the stomach and the right portion above the first part of the small intestine.
- The liver has two main portions, or lobes.
- Each lobe is further divided into eight segments.
- Each segment has an estimated 1,000 lobules, or small lobes.
- Each of these lobules has a small tube (duct) that flows toward the common hepatic duct.



156

Types of liver disease

- Alcohol-related liver disease
- Non-alcoholic fatty liver disease
- Hepatitis
- Haemochromatosis
- Primary biliary cirrhosis



157

- Filters and processes blood
- Regulates composition of blood
- Metabolize (breaks down) nutrients
- Stores nutrients
- Makes blood clotting proteins
- Produce cholesterol
- Stores vitamins as well as minerals such as copper and iron
- Break down fats either stores fats or releases them as energy.
- Break down medication
- creating immune system factors that can fight against infection.
- storing extra blood sugar as glycogen

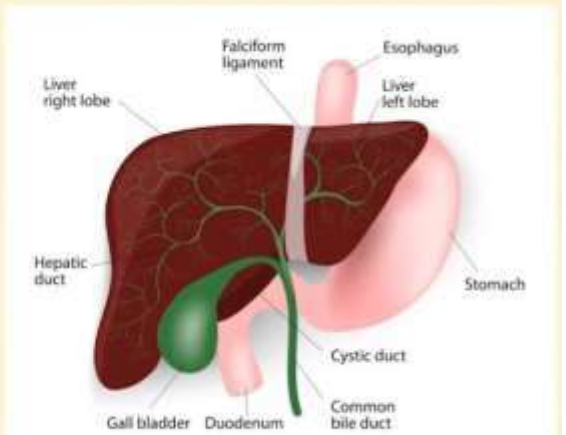
158

Liver and Gallbladder

- Liver Produces Bile
- Bile stored in the Gallbladder
- Bile travels through the pancreas
  And into the Small Intestine

Bile

- Byproduct of Red blood cells
- Increases absorption of fats
- And fat soluble vitamins
  -Vitamin A, D, E, and K



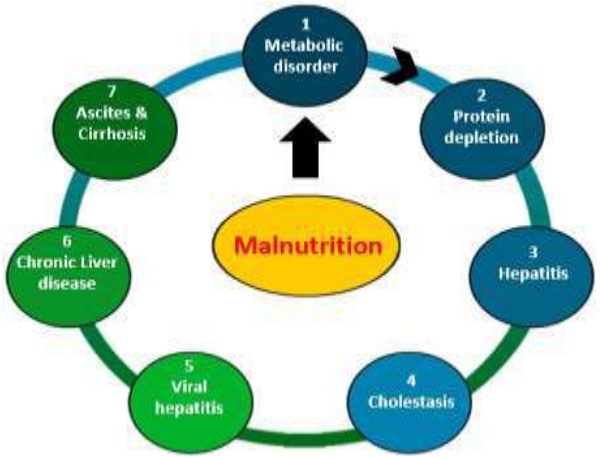
159

Symptoms of Liver Disease

- Weakness and fatigue
- Loss of appetites
- Weight loss
- Nausea
- Vomiting
- Abdominal pain
- Swelling of the legs
- Ascites
- Joint pain
- Jaundice
- Dark urine
- Pale colored stools

160

Causes of Liver disorders



161

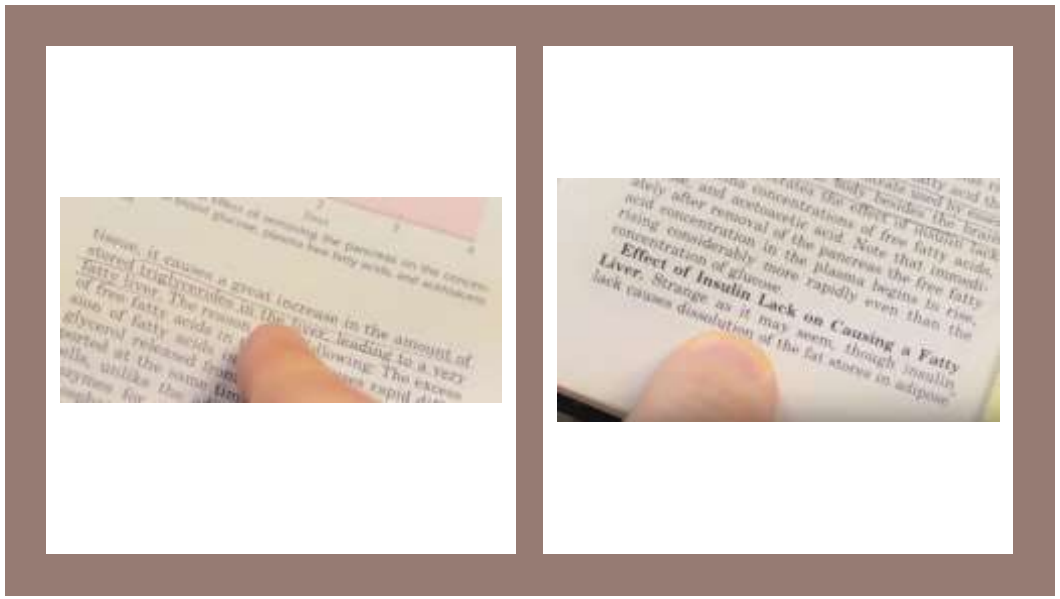
Stages of Liver Disease

162

High Liver Enzymes Meaning

- Obesity
- Stones blocking bile duct
- NAFLD
- AFLD
- Acetaminophen (Tylenol, others)
- Medication toxicity
- Viral infection
- Cirrhosis (IR)
- Liver cancer
- Toxic hepatitis
- Wilson's disease (too much copper stored in your body)

163



164

Viral Infection

- Parasites and viruses can infect the liver, causing inflammation that reduces liver function.
- The viruses that cause liver damage can be spread through blood or semen, contaminated food or water, or close contact with a person who is infected.
- The most common types of liver infection are hepatitis viruses, including:
  - Hepatitis A
  - Hepatitis B
  - Hepatitis C

165

Hepatitis B and Hepatitis C NOT spread by

- **Sharing eating utensils,**
- **Breastfeeding, (unless nipples are cracked and bleeding)**
- **Hugging,**
- **Kissing,**
- **Holding hands,**
- **Coughing, or sneezing.**
- **It is also not spread through food or water.**

166

Food Supplements

- Milk thistle
- Curcumin
- Digestive enzymes
- Artichoke
- Probiotics
- Minerals & Multivitamins

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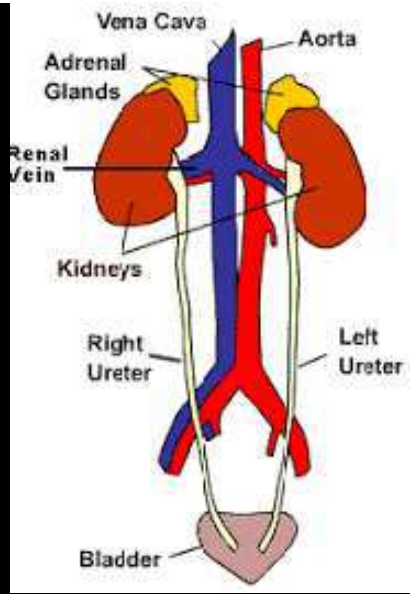
12

Urogenital System

168

Urogenital System

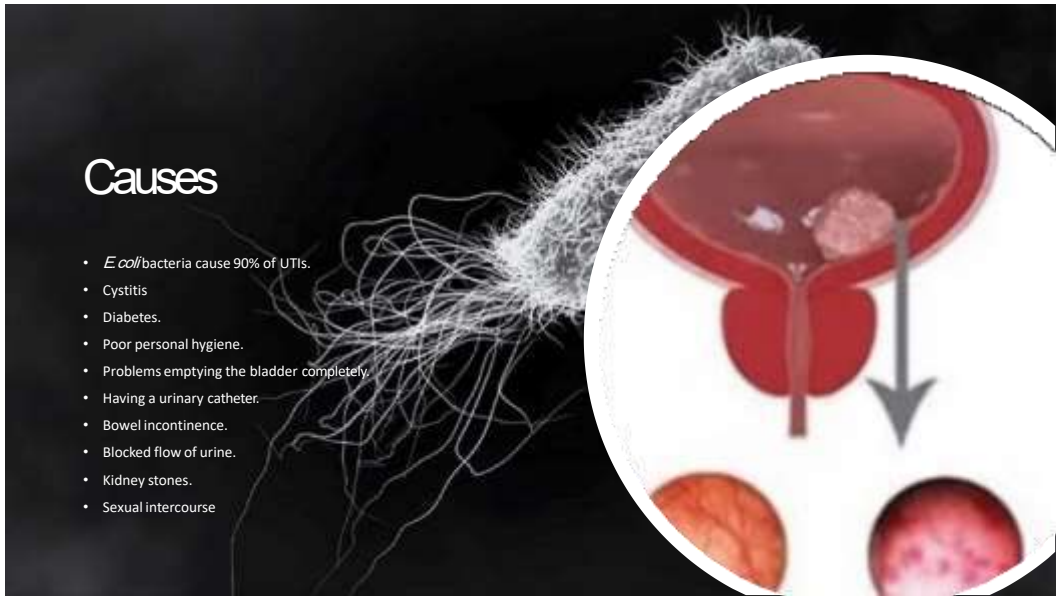
- The urinary system consists of the kidneys, ureters, bladder and urethra.
- Infections of the urinary tract (UTIs) are the second most common type of infection in the body.
  - **Pain or burning**
  - **Pressure in your lower belly**
  - **Irritable bladder**
  - **Urine that smells bad.**
  - **Feeling like you need to urinate more often than usual.**
  - **Feeling the urge to urinate but not being able to, leaking a little urine.**



169

Causes

- *E. coli* bacteria cause 90% of UTIs.
- Cystitis
- Diabetes.
- Poor personal hygiene.
- Problems emptying the bladder completely.
- Having a urinary catheter.
- Bowel incontinence.
- Blocked flow of urine.
- Kidney stones.
- Sexual intercourse



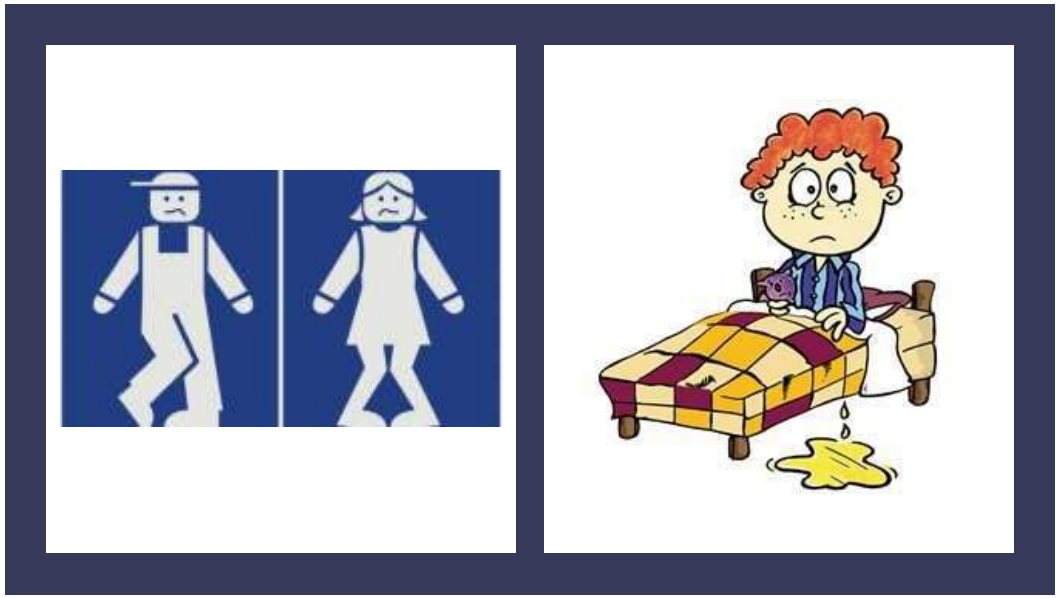
170

171

Treatment

- **D-Mannose** is by far the most effective supplement for both treatment and prevention of **UTIs**.
- Nettle
- Cranberry

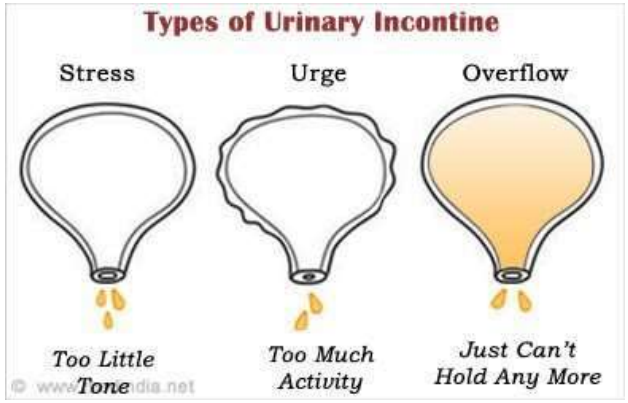
172

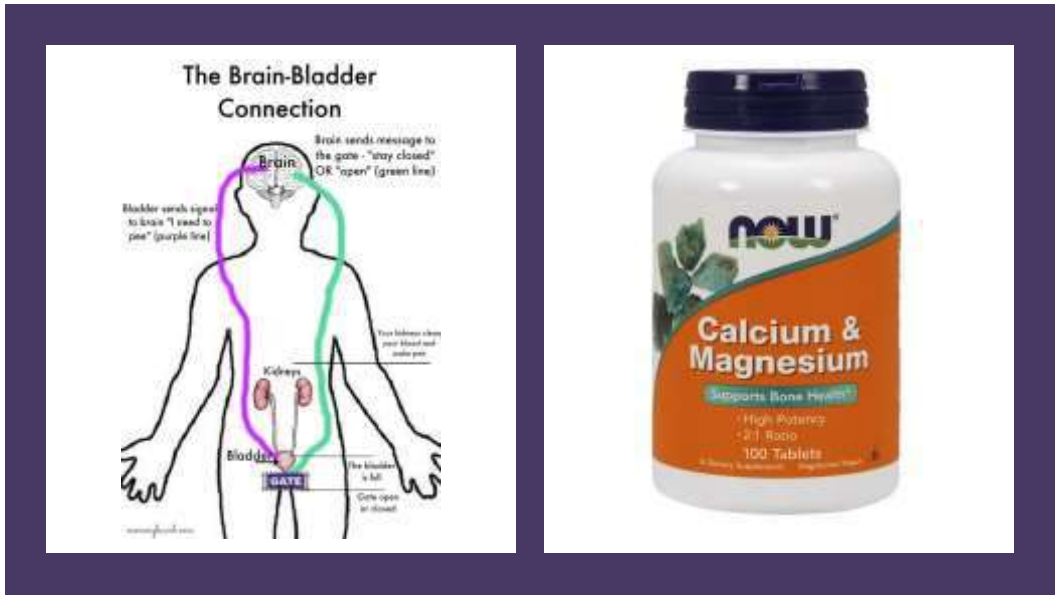


173

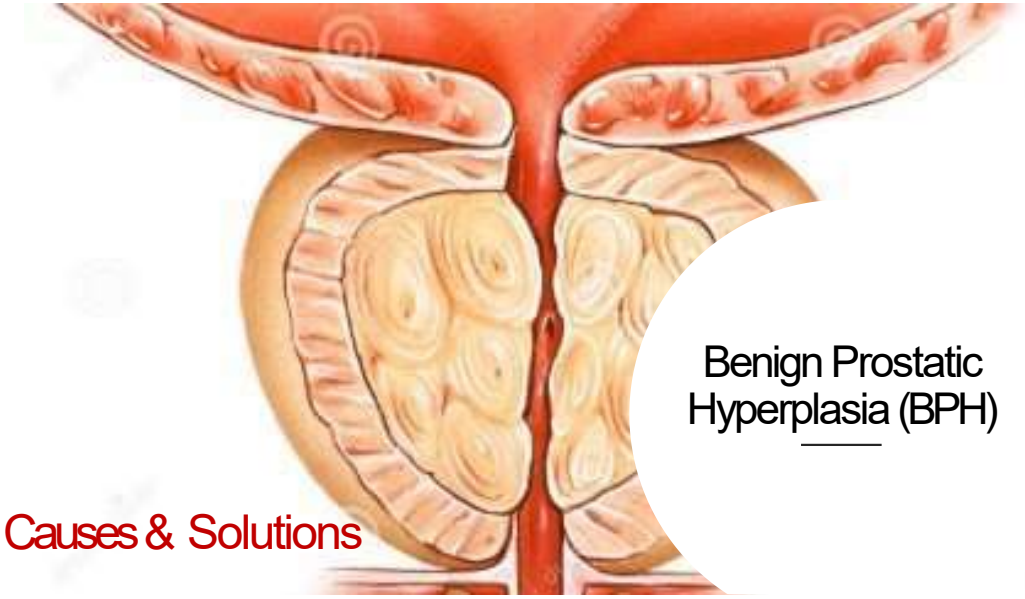
Urinary Incontinence

174




The Brain-Bladder Connection
Brain
Kidneys
Bladder
GATE
Calcium & Magnesium
100 Tablets

175

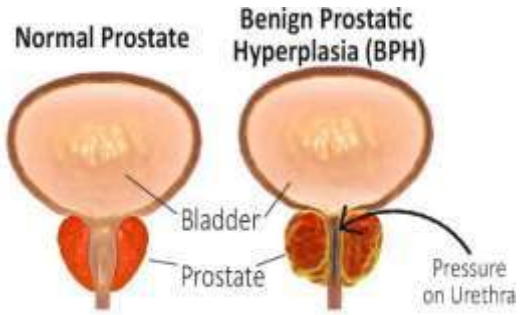

Benign Prostatic Hyperplasia (BPH)
Causes & Solutions

176

Definition

- Benign prostatic hyperplasia (BPH) is a common condition as men get older.
- An **enlarged prostate gland can cause uncomfortable urinary symptoms**, such as **blocking the flow of urine out of the bladder**.
- It can also cause bladder, **urinary** tract or **kidney** problems.

177



Enlarged Prostate Symptoms

- A weak or slow urinary stream
- A feeling of incomplete bladder emptying
- Difficulty starting urination
- Frequent urination
- Getting up frequently at night to urinate
- Returning to urinate again minutes after finishing
- Low libido
- Muscle loss
- Loss vitality
- Erectile dysfunction

178

Enlarged Prostate Causes

First Theory: related to low testosterone and high estrogen (related to age).

Second theory: related to increase in DHT (which arise from testosterone).

Other causes lead to low testosterone:

- Liver damage
- High insulin
- Low fat diet
- Drugs: Statin, Diabetic drugs
- Water tap
- High aromatase (enzyme from adrenal convert testosterone to estrogen

179

Enlarged Prostate: Solutions

Increase growth hormone	Protein Exercise
Inhibit aromatase enzyme	Zinc
Intermitted fasting	
Decrease cortisol	Vegetables Potassium

180


Nettle
shop online www.puritan.com
Puritans Pride
FLOW GUARD
Saw Palmetto
450 MG
200
Pepon
Plus

181


13
Ovary
Uterus
Endometrium
Uterine artery
Uterus
Fibroid
Gynecological Diseases
Causes & Solutions
Fetus
Uterus
Bleeding
Cervix

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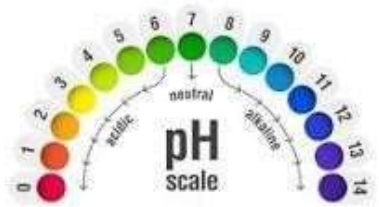
Basics 1

- A normal vaginal **pH** is between 3.8 and 4.5. A **pH** level within this range can help to keep bacterial and fungal infections at natural harbor.
- Lactobacilli bacteria live in the vagina and **secrete lactic acid** and **hydrogen peroxide**, which give the vagina its acidic **pH** level.
- **Semen** has a **pH** of 7.1 to 8 and **can** elevate **pH**.



183

What causes an unbalanced vaginal PH

Antibiotics: These drugs kill not only the bad bacteria that cause disease, but also the good bacteria you need to maintain a healthy, more acidic, vaginal pH level.

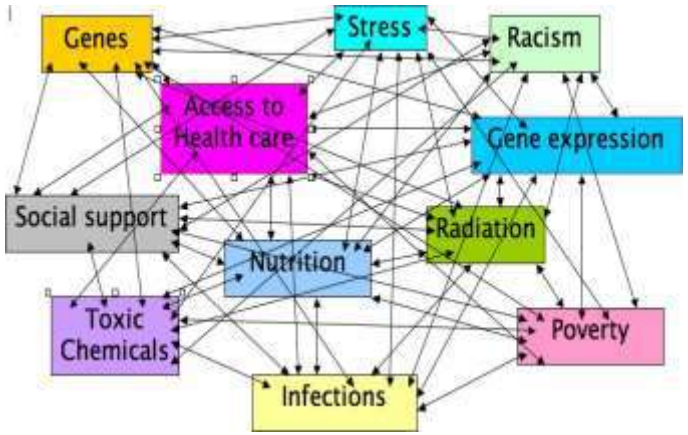
Douching: Although it isn't advised, about 20% of women regularly wash out their vagina with a mixture of water and vinegar, baking soda, or iodine. **Douching not only increases the vaginal pH level, but also encourages the growth of harmful bacterial, overall.**

Menstrual periods: Menstrual blood is a little bit basic and raises the pH in the vagina. When that blood flows through the vagina and is absorbed into a tampon or pad and sits in place, it can raise the pH level of the vagina.

Frequencies sex: Semen is alkaline, which can encourage growth of certain bacteria.

184

Basics 2



185

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Factors that Influence Women's Health

Hormonal Influences	**Social Factors**	**Morbidity and Mortality**
Women's Health across the Lifespan • Birth to Young Adulthood. • 15 to 44 Years. • 45 to 64 Years. • 65 Years and Older.	**History**	**Physical Examination & Lab. Test**

187

Estrogen, Progesterone, and Reproduction

The ovaries maintain the health of the female reproductive system. They secrete two main **hormones—estrogen and progesterone**.

Diseases associated with the ovaries include **ovarian cysts**, **ovarian cancer**, **menstrual cycle disorders**, and **polycystic ovarian syndrome**.

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Ovarian Cysts

Most **ovarian cysts** are small and don't cause symptoms.

If a **cyst does** cause symptoms, **you** may **have** pressure, bloating, swelling, or pain **in the** lower abdomen on the side of the **cyst**.

There are various types of ovarian cysts, such as dermoid cysts and endometrioma cysts. However, functional cysts are the most common type. The two types of functional cysts include:

- **Follicle cyst:**
  - If the follicle doesn't break open, the fluid inside the follicle can form a cyst on the ovary.
- **Corpus luteum cysts**
  - if the sac doesn't dissolve after releasing an egg and the opening of the follicle seals, additional fluid can develop inside the sac, and this accumulation of fluid causes a corpus luteum cyst.

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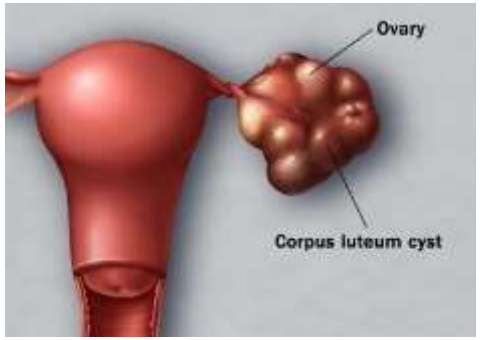
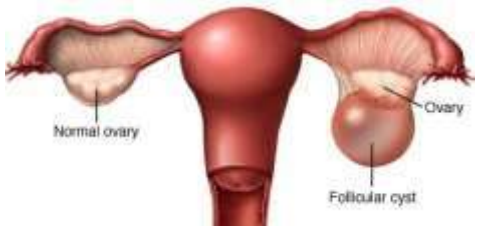
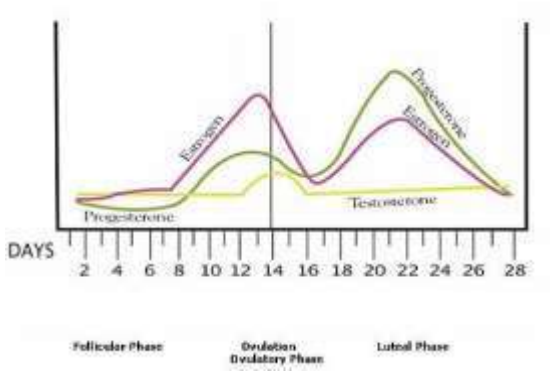




Ovarian Cysts

190

Menstrual cycle disorders



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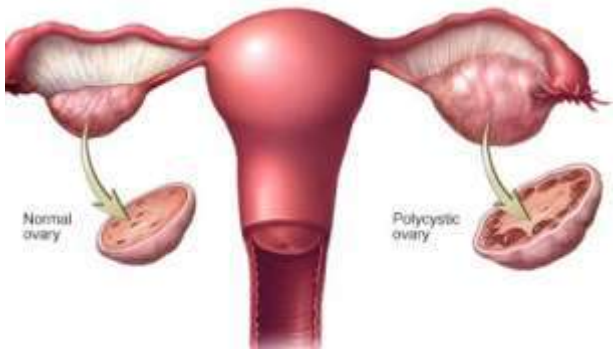

Polycystic ovary syndrome (PCOS)

- Is a set of symptoms due to elevated androgens (male hormones) in females.
- Signs and symptoms of PCOS include:
  - irregular or no menstrual periods,
  - heavy periods,
  - excess body and facial hair,
  - acne,
  - pelvic pain,
  - difficulty getting pregnant, and
  - patches of thick, darker, soft skin.

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Vaginitis

- **Vaginitis** is an inflammation of the vagina that can result in discharge, itching and pain. The cause is usually:
  - a change in the normal balance of **vaginal bacteria or an infection**.
  - **Reduced estrogen levels** after menopause and some skin disorders can also cause vaginitis.
  - **Mucopurulent cervicitis**: (***Large amounts of unusual vaginal discharge, Frequent, painful urination, Pain during intercourse, Bleeding between menstrual periods, Vaginal bleeding after intercourse, not associated with a menstrual period***).
  - **Herpes simplex virus**
  - **Atrophic vaginitis**
  - **Allergic reactions**
  - **Vulvar vestibulitis (**Nerve injury or irritation, chronic inflammation)
  - **Foreign bodies**

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Vaginal Environment

- Normal vaginal discharge is clear to white, odorless, and of high viscosity.
- Normal bacterial flora is dominated by lactobacilli – other potential pathogens present.
- **Acidic environment (pH 3.8-4.2)** inhibits the overgrowth of bacteria
- Some lactobacilli also produce H_2O_2, a potential microbicide

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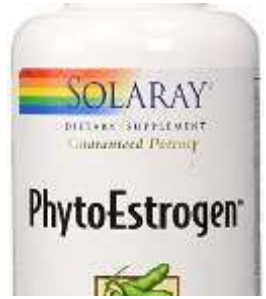
Common Types of Vaginitis

- **Trichomoniasis** (15%-20%)
- **Bacterial vaginosis** (40%-45%)
- **Vulvovaginal candidiasis** (20%-25%)

195



Food Supplements

- **Phytoestrogens**
- **Black cohosh (*Cimicifuga racemosa*)**
- **Dong Qui *(Angelica sinensis)***
- **Red Clover *(Trifolium pretense)***
- **Chasteberry (Vitexagnus-castus)**

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Mayo Clinic - Causes of Cancer

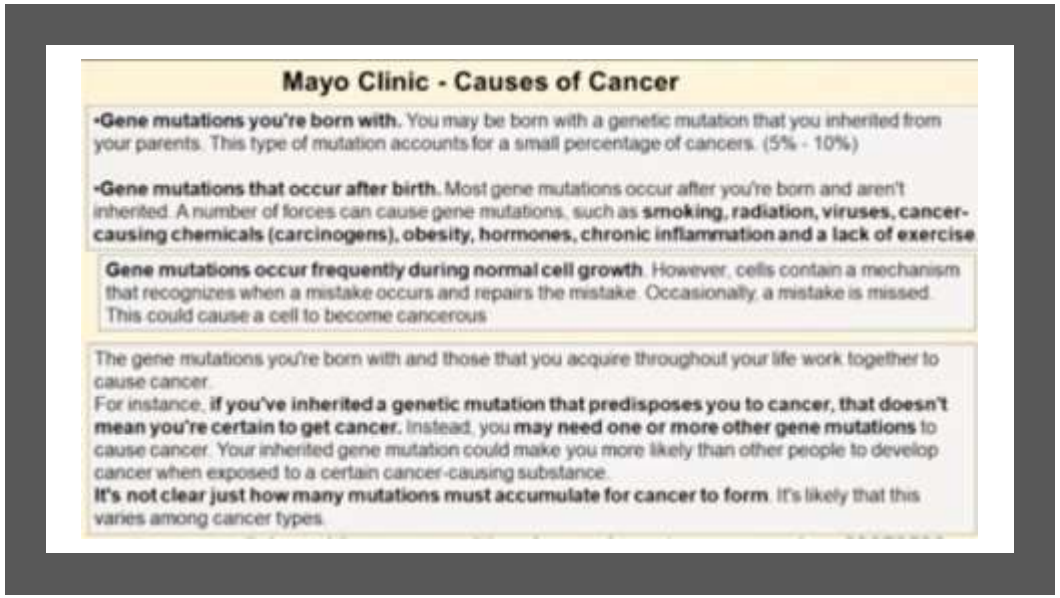
Cancer refers to any one of a large number of diseases characterized by the development of abnormal cells that divide uncontrollably and have the ability to infiltrate and destroy normal body tissue. Cancer often has the ability to spread throughout your body.

Cancer is caused by changes (mutations) to the DNA within cells. ....Errors in the instructions can cause the cell to stop its normal function and may allow a cell to become cancerous.

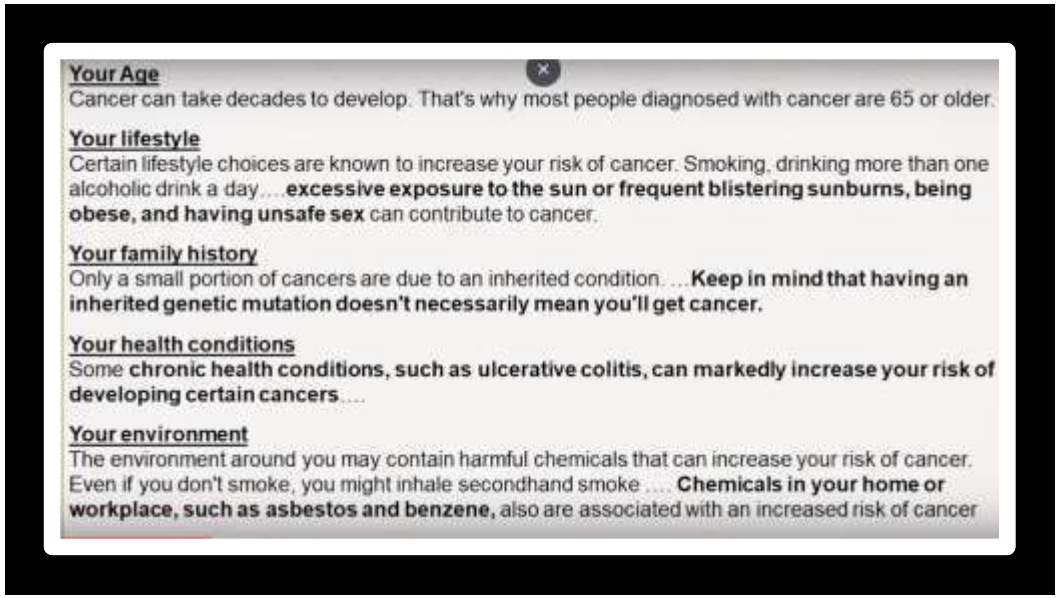
Cancer is a genetic disease —that is, cancer is caused by certain changes to genes that control the way our cells function, especially how they grow and divide

The etiology of cancer is multifactorial, with **genetic, environmental, medical, and lifestyle factors** interacting to produce a given malignancy.

198


Mayo Clinic - Causes of Cancer
•Gene mutations you're born with. You may be born with a genetic mutation that you inherited from your parents. This type of mutation accounts for a small percentage of cancers. (5% - 10%)
•Gene mutations that occur after birth. Most gene mutations occur after you're born and aren't inherited. A number of forces can cause gene mutations, such as smoking, radiation, viruses, cancer-causing chemicals (carcinogens), obesity, hormones, chronic inflammation and a lack of exercise.
Gene mutations occur frequently during normal cell growth. However, cells contain a mechanism that recognizes when a mistake occurs and repairs the mistake. Occasionally, a mistake is missed. This could cause a cell to become cancerous.
The gene mutations you're born with and those that you acquire throughout your life work together to cause cancer.
For instance, if you've inherited a genetic mutation that predisposes you to cancer, that doesn't mean you're certain to get cancer. Instead, you may need one or more other gene mutations to cause cancer. Your inherited gene mutation could make you more likely than other people to develop cancer when exposed to a certain cancer-causing substance.
It's not clear just how many mutations must accumulate for cancer to form. It's likely that this varies among cancer types.

199


Your Age
Cancer can take decades to develop. That's why most people diagnosed with cancer are 65 or older.
Your lifestyle
Certain lifestyle choices are known to increase your risk of cancer. Smoking, drinking more than one alcoholic drink a day....excessive exposure to the sun or frequent blistering sunburns, being obese, and having unsafe sex can contribute to cancer.
Your family history
Only a small portion of cancers are due to an inherited condition. ...Keep in mind that having an inherited genetic mutation doesn't necessarily mean you'll get cancer.
Your health conditions
Some chronic health conditions, such as ulcerative colitis, can markedly increase your risk of developing certain cancers....
Your environment
The environment around you may contain harmful chemicals that can increase your risk of cancer. Even if you don't smoke, you might inhale secondhand smoke .... Chemicals in your home or workplace, such as asbestos and benzene, also are associated with an increased risk of cancer

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Cancer Statistics

- Early 1900's: 1 in 20 got cancer
- 1940's: 1 in 16
- 1970's: 1 in 10
- 2016: 1 in 2 people will get cancer [14]
- Over 600,000 deaths from cancer every year in the U.S.
- In 2011: cancer was the #1 cause of Death in the Western world [13]
- The World Health Organization (WHO) predicts that deaths from cancer will double by the year 2030 [15]

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Where cancer lives?

- The first trigger to **damage is mitochondria**, then the normal anabolic metabolism of normal cell will adapt new conditions to **fermentation sugar and/or glutamine**.
- Thus, **Cancer cells thrive on certain fuels–including glucose and glutamine, two key elements that you must inhibit in your anti-cancer diet.**
- **Glutamine found everywhere–even in many plant sources of protein (Meat, egg, milk, cabbage, beans, nuts).**
- **Glutamine, the most abundant amino acid in plasma, is a well-known nutrient used by cancer cells to increase proliferation as well as survival under metabolic stress conditions.**
- **Green tea contains compounds, which inhibits glutamate dehydrogenase, that helps cancer cells use glutamine**
- **All peppers from the *Capsicum annum* family, contain L-asparaginase, especially in their seeds.**
- Tumor cells can **not live on ketones**, thus diet rich in cholesterol and ketones is benefit to cancer patients.

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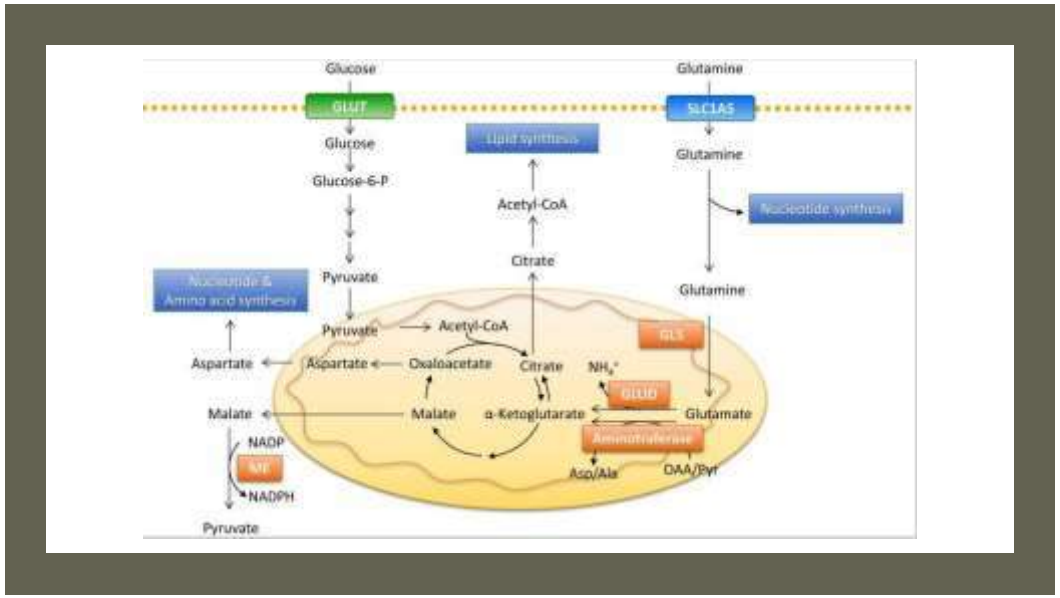
Glucose
GLUT
Glucose
Glucose-6-P
Pyruvate
Nucleotide & Amino acid synthesis
Aspartate
Malate
NADP
ME
NADPH
Pyruvate
Lipid synthesis
Acetyl-CoA
Citrate
Pyruvate
Acetyl-CoA
Aspartate
Oxaloacetate
Citrate
Malate
α-Ketoglutarate
Glutamine
SLC1A5
Glutamine
Nucleotide synthesis
Glutamine
GLS
GLUD
Glutamate
Aminotransferase
Asp/Ala
OAA/Pyr

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Solution?
Less Stress
Any type of food or drink without sugar or glutamine

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