THE THEORY OF PHYLEMBRYOGENESIS

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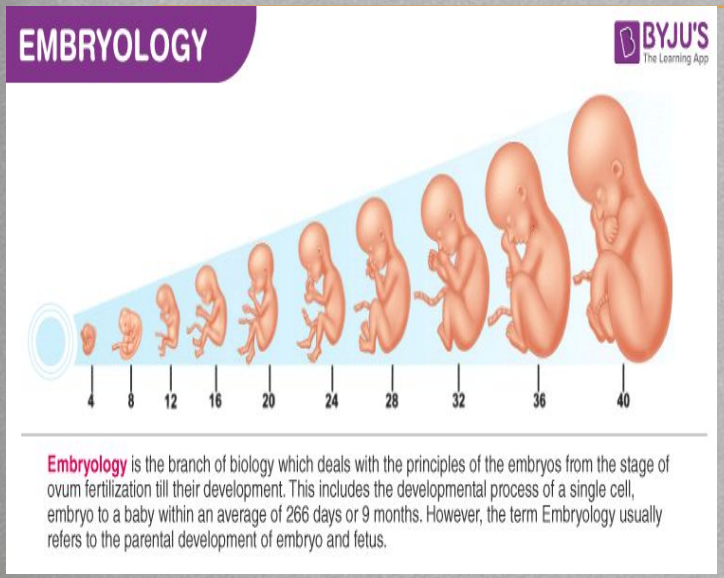
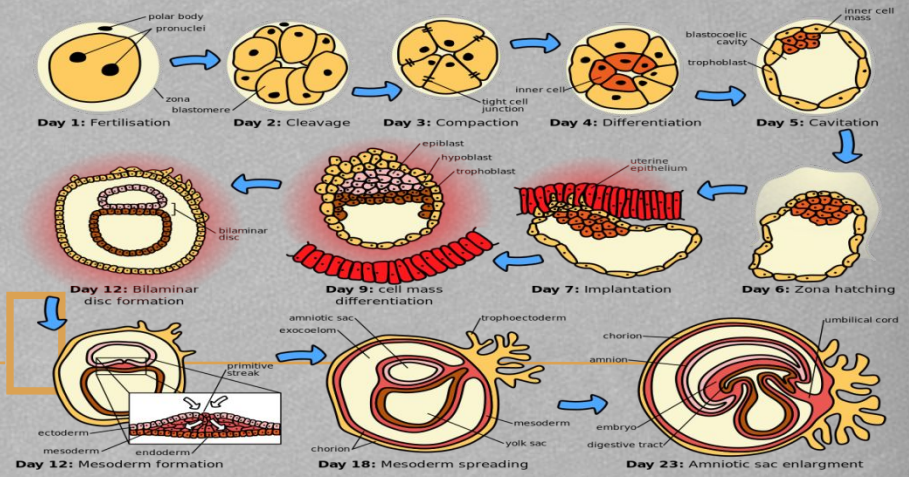
DATE-03.06.2020

DEFINE EMBRYOGENESIS?

Human developmental period





Embryogenesis is defined by a sequential series of dynamic processes that include cell division and growth, and the elaboration of differentiation programs leading to cell fate specification.

What is Arkhallaksis?

Arkhallaksis (Greek arche – the first, the prime cause, the beginning + Greek allaxis from allaso – to change, change) – phylogenesis type, is characterized by the fact that change of an initial laying of body is observed at early stages of an embryogenesis and changes the further course of ontogenesis.

WHAT IS VASCULAR SYSTEM?

- The **vascular system**, also called the **circulatory system**, is made up of the vessels that carry blood and lymph through the body. The arteries and veins carry blood throughout the body, delivering oxygen and nutrients to the body tissues and taking away tissue waste matter.
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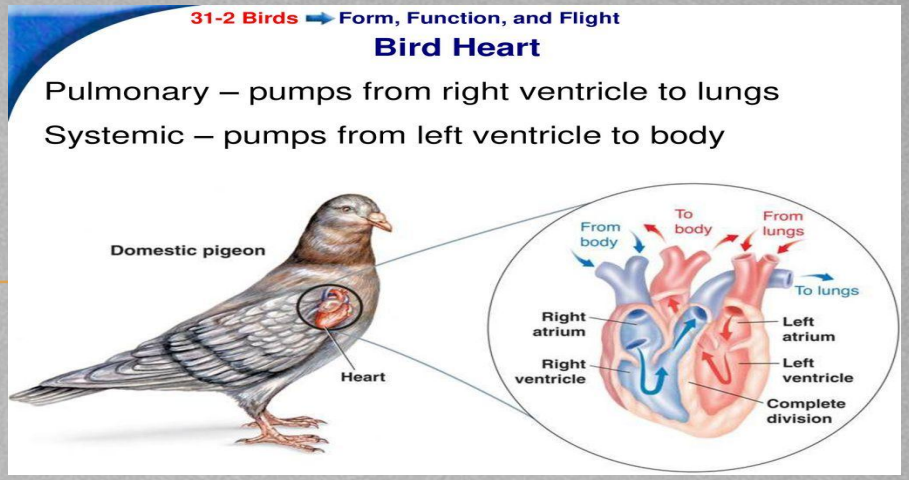
PHYLOGENESIS OF CHORDAVIAN VASCULAR SYSTEM

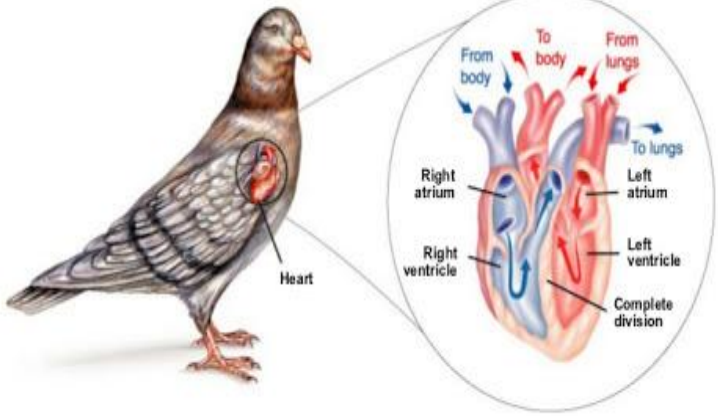
Birds have evolved a high-performance cardiovascular system to meet the rigorous demands of running, flying, swimming, or diving in a variety of environments, some of them extreme. Sustained high levels of activity in these environments place severe demands on the cardiovascular system to provide adequate delivery of oxygen to working vascular beds and to provide efficient removal of metabolic products. Furthermore, birds are endothermic organisms and the cardiovascular system plays a major role in conserving or removing body heat. The descriptions of the component parts of the circulatory system in this chapter illustrate that these transport requirements are met in a variety of ways in birds inhabiting particular environmental niches. This chapter describes the morphological and functional aspects of the avian heart, circulatory hemodynamics, and the vascular tree. A common thread running through this discussion is that the component parts of the circulation must function in an integrated fashion to ensure tissue oxygen delivery matches tissue demands. This is accomplished through the integrative control of circulation by autoregulatory, humoral, and neural mechanisms. Since the last edition of this book, a significant number of studies have examined the development of cardiovascular control in avian embryos which has expanded our understanding of this system throughout ontogeny.

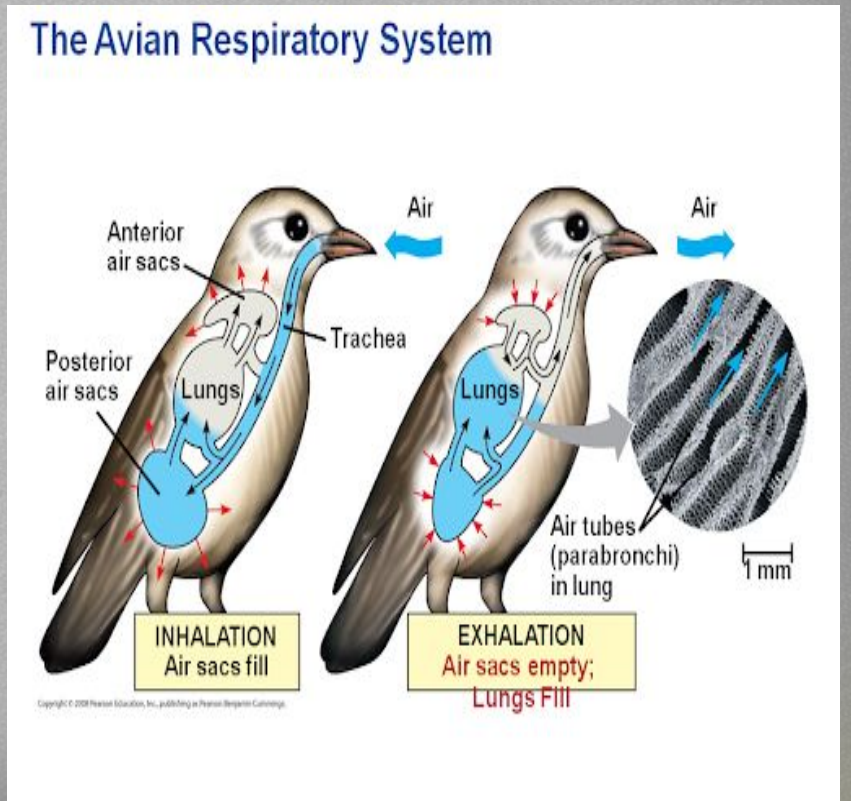
AVIAN RESPIRATORY SYSTEM



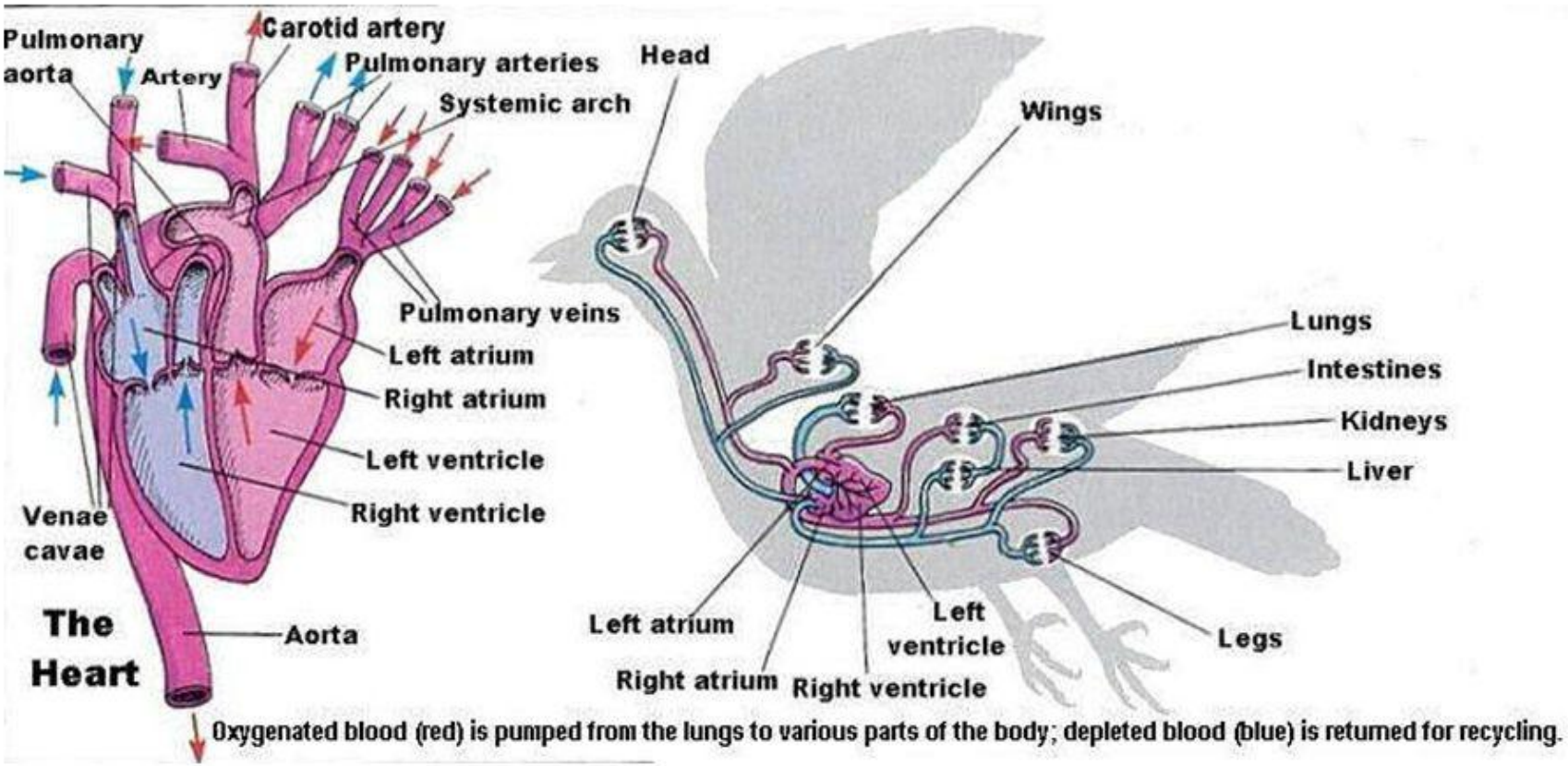
Circulation

- Double loop circulatory system
- 4 chambered heart



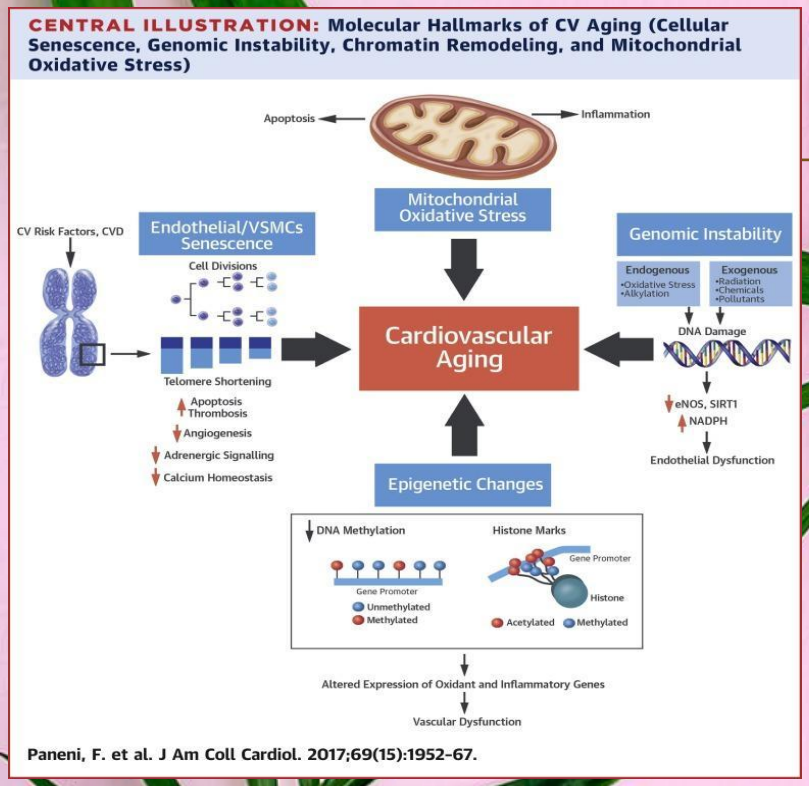


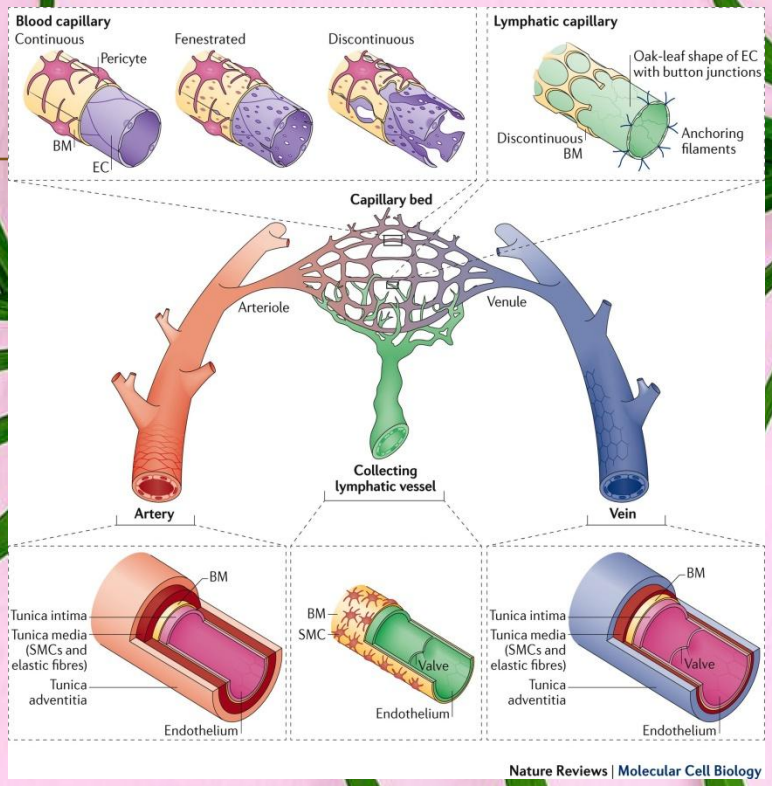
Circulatory System



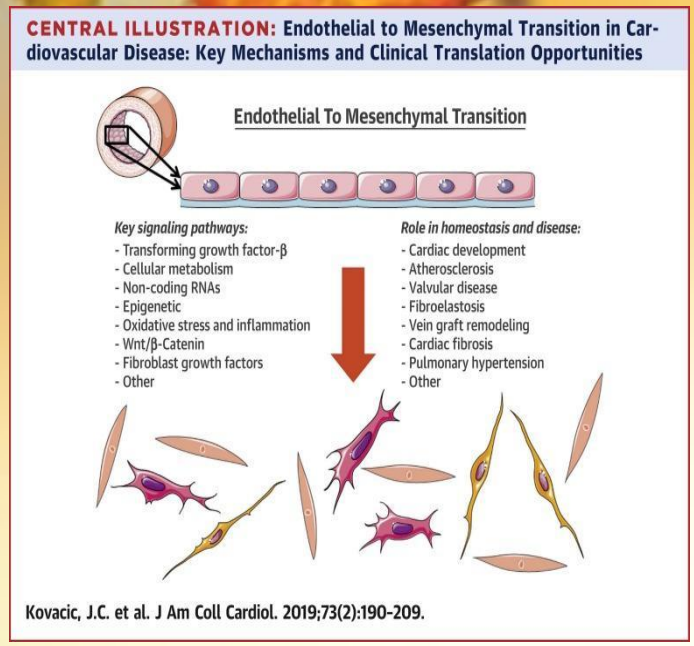
Generally birds have hearts larger and ones that beat faster than mammals. The human heart pulse rate at rest averages 72 beats per minute. The House Sparrow's heart pulse rate at rest averages 460 beats per minute. In the Ruby-throated Hummingbird pulse rate at rest is 615! **WOW!**

DISORDERS OF VASCULAR SYSTEM?





Common disorders?



Atherosclerosis is a **developmental disease** in the large arteries, defined by the accumulation of lipids, macrophages and fibrous materials in the intima. When the endothelial cell of **blood vessel** is damaged, it loses the ability to regulate itself. It results in inflammation as the macrophages irrupt the vessel wall. The most common vascular diseases are **stroke**, **peripheral artery disease** (**PAD**), **abdominal aortic aneurysm** (AAA), carotid artery disease (CAD), arteriovenous malformation (AVM), critical limb-threatening ischemia (CLTI), pulmonary embolism (blood clots), deep vein thrombosis (DVT), chronic venous insufficiency (CVI)

ATHEROSCLEROSIS & PERIPHERAL ARTERY DISEASE

Atherosclerosis and peripheral artery disease

Coronary arteries supply blood to your heart muscle. Peripheral arteries carry blood to other tissues and organs. Both can have deposits of fat, cholesterol, and other substances on their inside walls called plaque. Over time, plaque can build up, so the vessel becomes narrow and it's harder for blood to flow. Or a plaque could rupture, blocking blood flow.

What is vascular disorder?

Vascular disease is any condition that affects the network of your blood vessels.

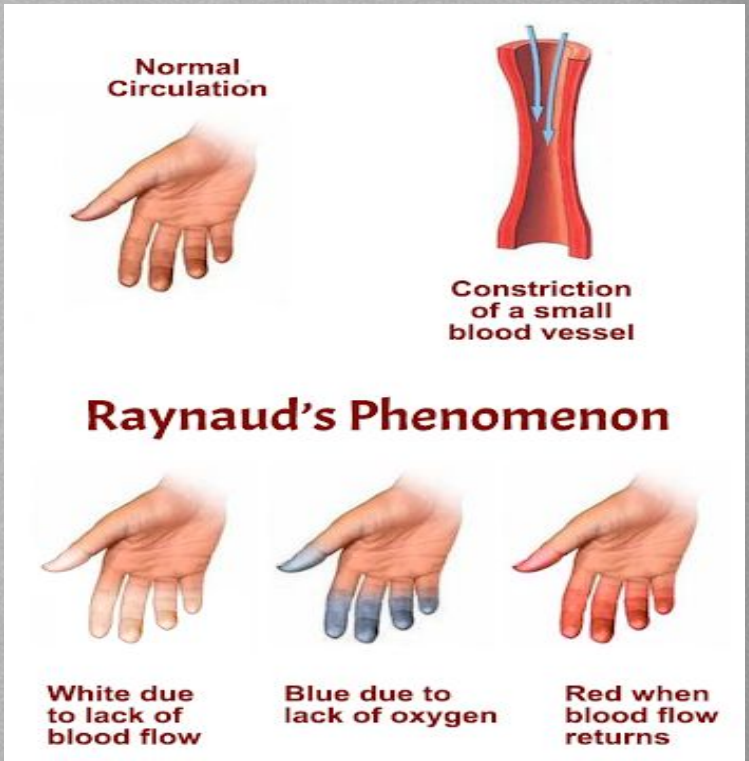
This network is known as your vascular or circulatory system. "Vascular"comes from a Latin word for hollow container. If your entire network of blood vessels were stretched end-to-end, they could circle the Earth multiple times.

Some of these vessels move blood. As your heart beats, it pumps blood with oxygen and nutrients to feed your tissues and carry off waste. Arteries move blood away from the heart. Veins return it.

VASCULAR DISEASES & PAIN

Raynaud's Phenomenon (Also Called Raynaud's Disease or Raynaud's Syndrome)

Raynaud's phenomenon consists of spasms of the small arteries of the fingers and sometimes the toes, brought on by exposure to cold or stress. Certain occupational exposures bring on Raynaud's. The episodes produce a temporary lack of blood supply to the area, causing the skin to appear white or bluish and feel cold or numb. In some cases, the symptoms of Raynaud's may be related to underlying diseases such as lupus, rheumatoid arthritis, and scleroderma.



Symptoms and Signs of Raynaud's Disease

Primary Raynaud's Disease:

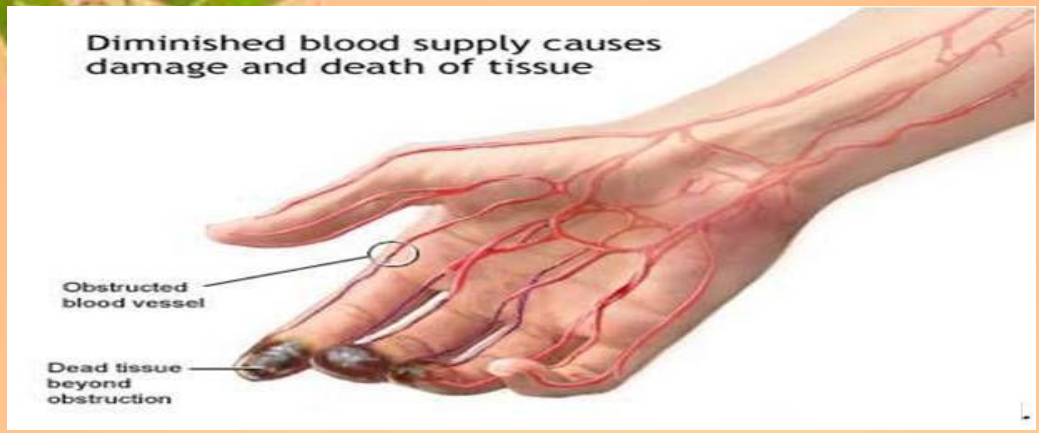
1. Cold fingers and toes
2. Color changes in your skin in response to cold or stress (either white or blue)
3. Numbness or tingling in the fingers and toes (can be on the ears or nose)
4. Stinging or throbbing pain upon warming or stress relief and fingers turn a bright pink or red
5. Ulcers in the tips of fingers and/or toes

Secondary Raynaud's Disease:

1. Same reactions as Primary Raynaud's Disease, but people can expect symptoms similar to arthritis, a rash, or a thickening or hardening of the skin.

BUERGER'S DISEASE

- **Buerger's disease** is a rare **disease** of the arteries and veins in the arms and legs. In **Buerger's disease** — also called thromboangiitis obliterans — your blood vessels become inflamed, swell and can become blocked with blood clots (thrombi). Although no **treatment** can **cure Buerger's disease**, the most effective way to stop the **disease** from getting worse is to quit using all tobacco products. Even a few cigarettes a day can worsen the **disease**.



Buerger's disease features

- **Buerger's disease** (thromboangiit is obliterans) is a rare**disease** of the arteries and veins in the arms and legs. In**Buerger's disease**, your blood vessels become inflamed, swell and can become blocked with blood clots (thrombi). This eventually damages or destroys skin tissues and may lead to infection and gangrene.

Buerger's Disease

- Only in smokers
- Causes poor circulation in feet and hands
- May lead to tissue death and amputation
- Gets worse the more you smoke

Main cause of vascular disease & Symptoms?

SYMPTOMS:

- Buttock pain.
- Numbness, tingling, or weakness in the legs.
- Burning or aching pain in the feet or toes while resting.
- A sore on a leg or a foot that will not heal.
- One or both legs or feet feeling cold or changing color (pale, bluish, dark reddish)
- Loss of hair on the legs.
- Impotence. **Vascular Disease Causes** and Risk Factors
- **Vascular disease causes** can include: Atherosclerosis, the buildup of plaque in your arteries. Blockage in your **blood vessel** by a mass of debris (embolus) or blood clot (thrombus) Inflammation, called vasculitis.

THANKYOU FOR YOUR ATTENTION!!!