

# Cancer & It's Prevention & Sickle Cell Disease

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- Prevention of cancer
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# INTRODUCTION



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# Cancer

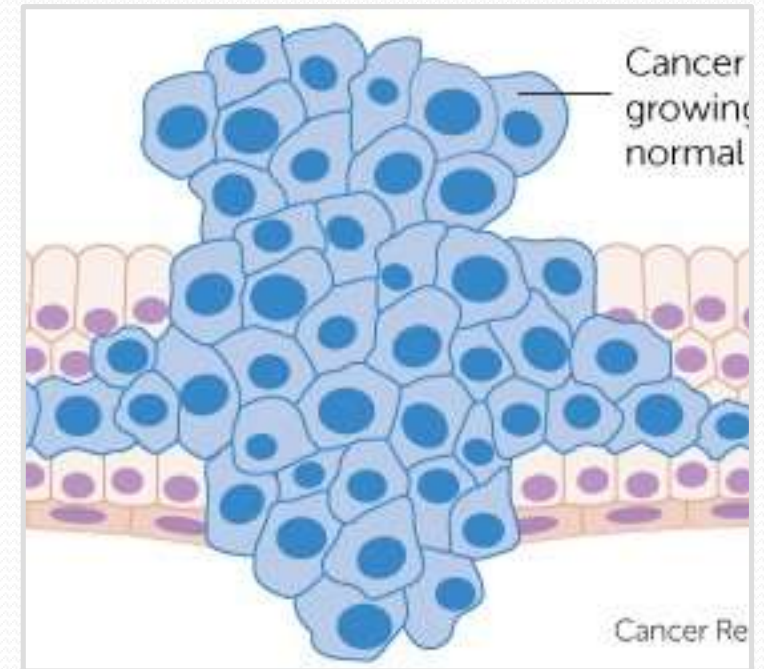
A large purple ribbon symbol, commonly used to represent prostate cancer awareness, positioned behind the word "Cancer".

# INTRODUCTION



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- Cancer is a public health problem worldwide affecting all categories of persons.
- It is the second common cause of death in developed countries and among the three leading causes of death in developing countries.



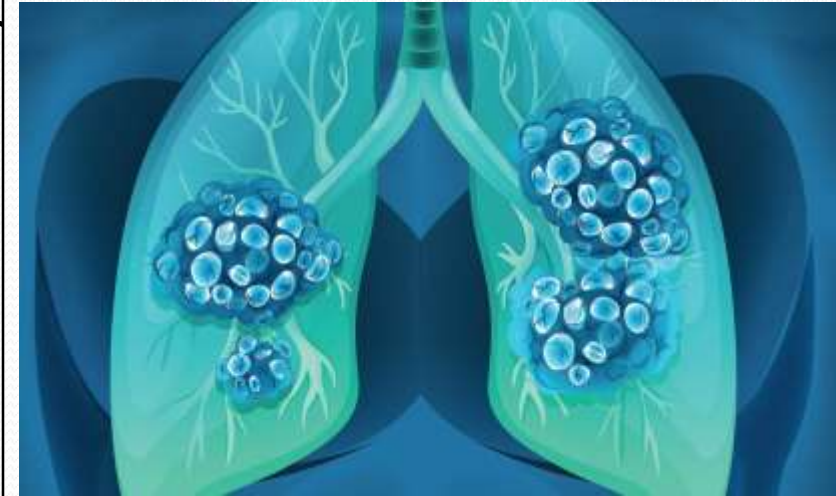
# INTRODUCTION 2



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- In the developed world:

- 1 in 4 deaths are due to cancer
- 1 in 17 deaths are due to **lung cancer**
- The most common cancers among males are Lung cancer
- Among the females are Breast cancers
- There are over 100 different forms of cancer

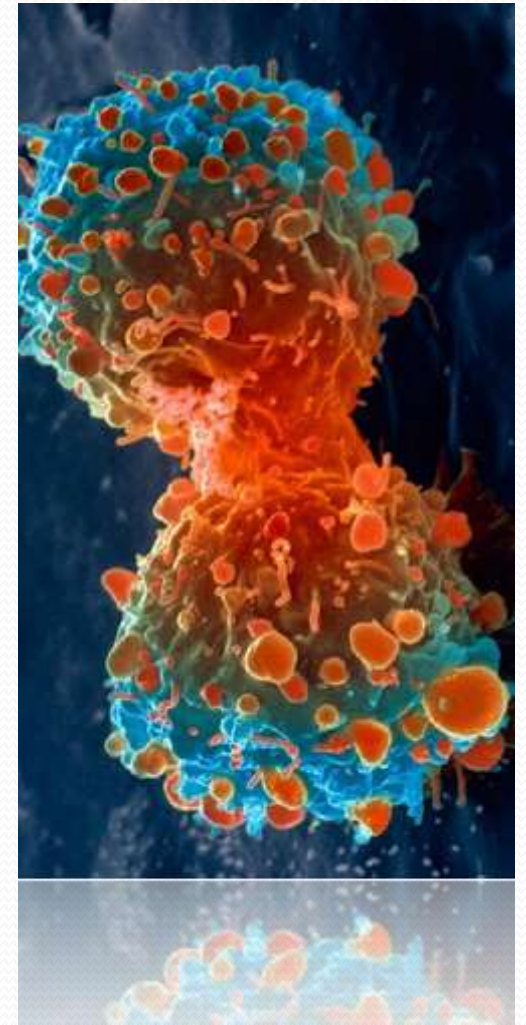


# INTRODUCTION

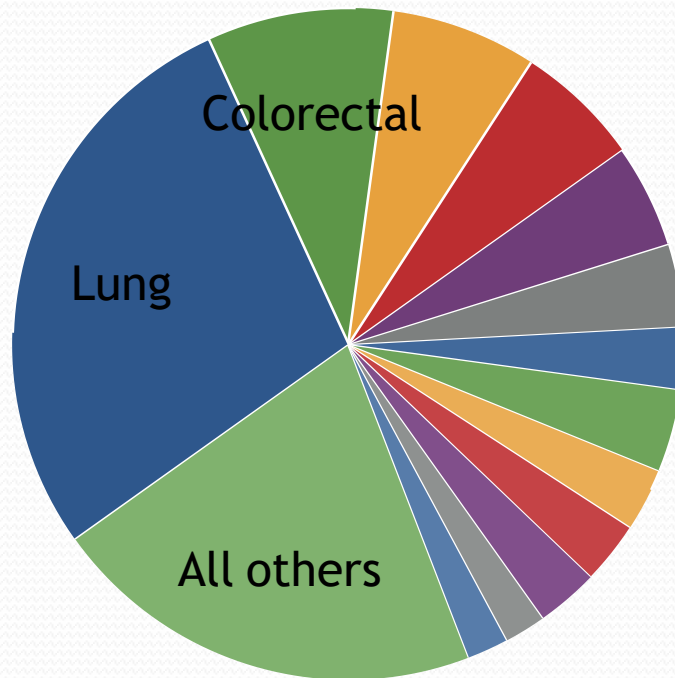


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- Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells.
- Cancer is caused by external factors and internal factors which may act together to initiate or promote carcinogenesis.
- **External Factors** – chemicals, radiation, viruses, and lifestyle..etc.
- **Internal Factors** – hormones, immune condition, and inherited mutations







**Leading causes of Cancer Deaths**

# The six most common cancers in Nigeria in descending order of frequency are:

- Breast,
- cervix,
- prostate,
- colorectal
- liver cancer and
- Lung Cancer

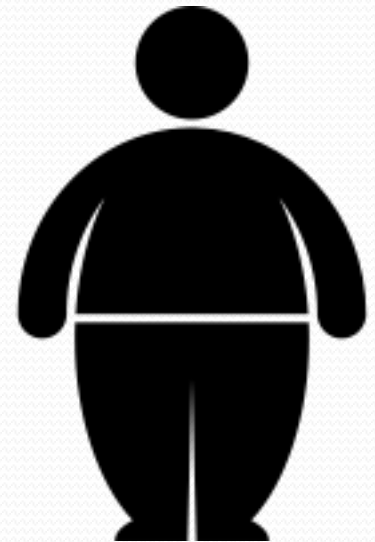
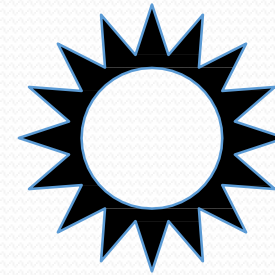
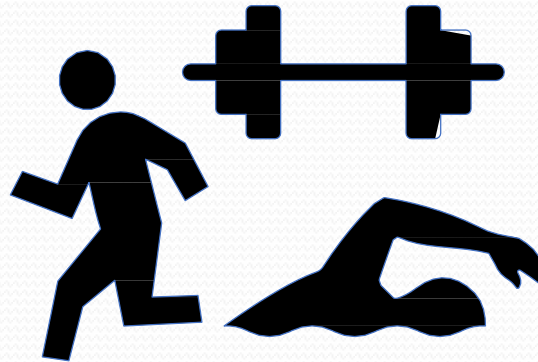






## What Causes Cancer?

### 1-Life style





## 2 Environmental factors

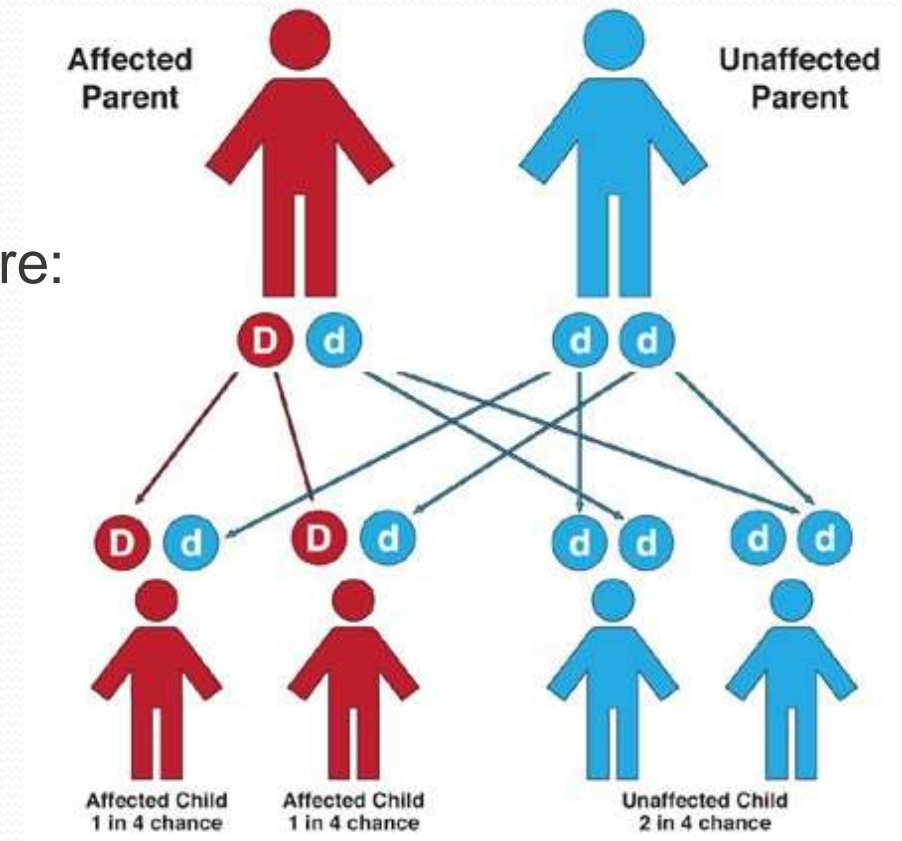
- Second hand smokers
- Air pollution (polycyclic hydrocarbons)
- Industrial pollution (Asbestos, aromatic amines)
- Chemical Exposure (nickel jewelries)





## 3-Inherited Risks

- Less than 15% of cancers are inherited
- Gene mutations are linked to some inherited cancers
- Cancers that may be caused by inherited gene mutations are:
  - Colon cancer
  - Breast cancer
  - Ovarian
  - Prostate cancer
  - Skin cancer



# Strong evidences on what increases the rate of cancer



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## Being Overweight increases 11 ca.

- Bowel(Colorectum)
- Breast
- Gall bladder
- Kidney
- Liver
- Esophagus-(oesophageal adenocarcinoma)
- Ovary
- Pancreas
- Prostate(advanced)
- Stomach(cardia)
- Womb(endometrium)



# Strong evidences on what increases the rate of cancer



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Alcohol **INCREASES** the risk of cancer of:

- Bowel ca.(colorectum)
- Breast(pre & post menopause )
- Liver
- Oropharynx
- Oesophagus(squamous cell carcinoma)
- Stomach





# Strong evidences on what increases the rate of cancer



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- Other Risk Factors include :
- AGE
- Tobacco
- Radiation
- Infection
- Hormone: Hormone related cancer
- Vitamin & Mineral deficiency
- Chemical substance : As Aflatoxin , alkalizing agent..



# Strong evidences on what decreases the risk of cancer

## Prevention

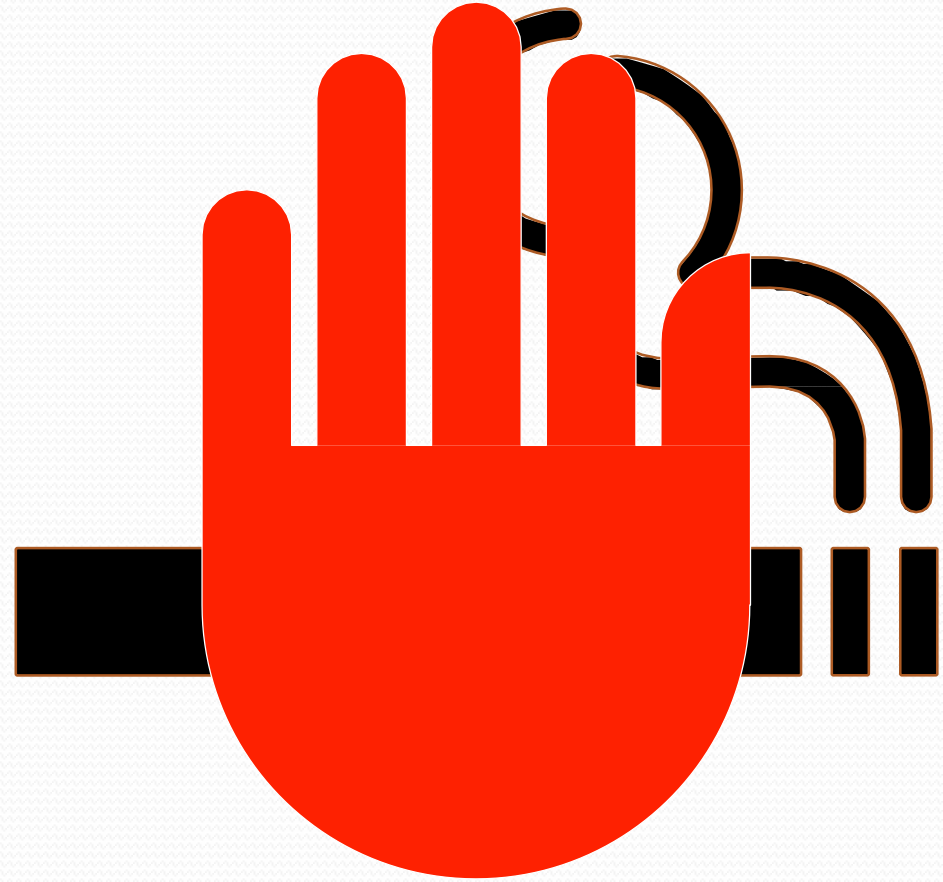




**Between 30-50% of all cancer cases are preventable. Prevention offers the most cost-effective long-term strategy for the control of cancer. National policies and programs should be implemented to raise awareness, to reduce exposure to cancer risk factors and to ensure that people are provided with the information and support they need to adopt healthy lifestyles**



**Avoiding tobacco — or deciding to stop using it — is one of the most important health decisions you can make. It's also an important part of cancer prevention. If you need help quitting tobacco, ask your doctor about stop-smoking products and other strategies for quitting.**



# Infection & its prevention



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Infectious agents such as ***Helicobacter pylori***, (HPV), hepatitis B and C, and Epstein-Barr virus. Vaccines are available for hepatitis B virus and some types of HPV and can reduce the risk of liver and cervical cancers, respectively.





**Alcohol use is a risk factor for many cancer types including cancer of the oral cavity, pharynx, larynx, oesophagus, liver, colorectum and breast. Risk of cancer increases with the amount of alcohol consumed. For several types of cancer, heavy drinking of alcohol combined with tobacco use substantially increases the risks of cancer. In 2010, alcohol-attributable cancers were estimated to be responsible for 337,400 deaths worldwide, predominantly among men.**



# Occupational Carcinogen



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**More than 40 agents, mixtures and exposure circumstances in the working environment are carcinogenic to humans and are classified as occupational carcinogens. Occupational cancers are concentrated among specific groups of the working population, for whom the risk of developing a particular form of cancer may be much higher than for the general population. It is well documented that occupational carcinogens are causally related to lung cancer, mesothelioma, and bladder cancer. For example, mesothelioma (cancer of the outer lining of the lung or chest cavity) is to a large extent caused by work-related exposure to asbestos**



**OCCUPATIONAL  
THERAPY**



# Radiation and its protection



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**Radiation is used in medicine and can help save lives as well as prevent the need for more invasive procedures. However, inappropriate use may cause harm because of unnecessary and unintended radiation doses for patients. Radiologic tests and procedures should be appropriately prescribed and properly performed to reduce unnecessary radiation doses, particularly in children.**



# Environmental Protection



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**Pollution of air, water and soil with carcinogenic chemicals contributes to the cancer burden to differing degrees depending on the geographical settings. Outdoor air pollution is classified as carcinogenic, or cancer-causing, for humans. It has been estimated that outdoor air pollution contributed to 3.2 million premature deaths worldwide in 2012 including more than 200,000 lung cancer deaths. Additionally, over 4 million people die prematurely from illness attributable to the household air pollution from cooking with solid fuels, 6% of these deaths are from lung cancer. Indoor air pollution from coal fires doubles the risk of lung cancer, particularly among non-smoking women. Exposure to carcinogens also occurs via the contamination of food, such as aflatoxins or dioxins**





# Physical inactivity, dietary factors, obesity and being overweight



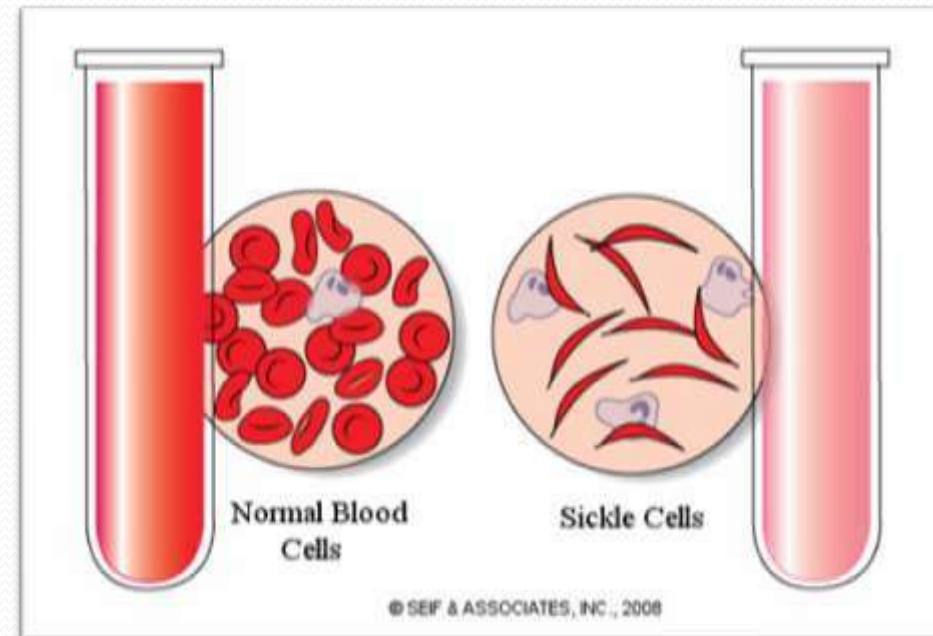
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**Dietary modification is another important approach to cancer control. There is a link between overweight and obesity to many types of cancer such as oesophagus, colorectum, breast, endometrium and kidney. Diets high in fruits and vegetables may have an independent protective effect against many cancers. Regular physical activity and the maintenance of a healthy body weight, along with a healthy diet, considerably reduce cancer risk. In addition, healthy eating habits that prevent the development of diet-associated cancers will also lower the risk of other noncommunicable diseases.**

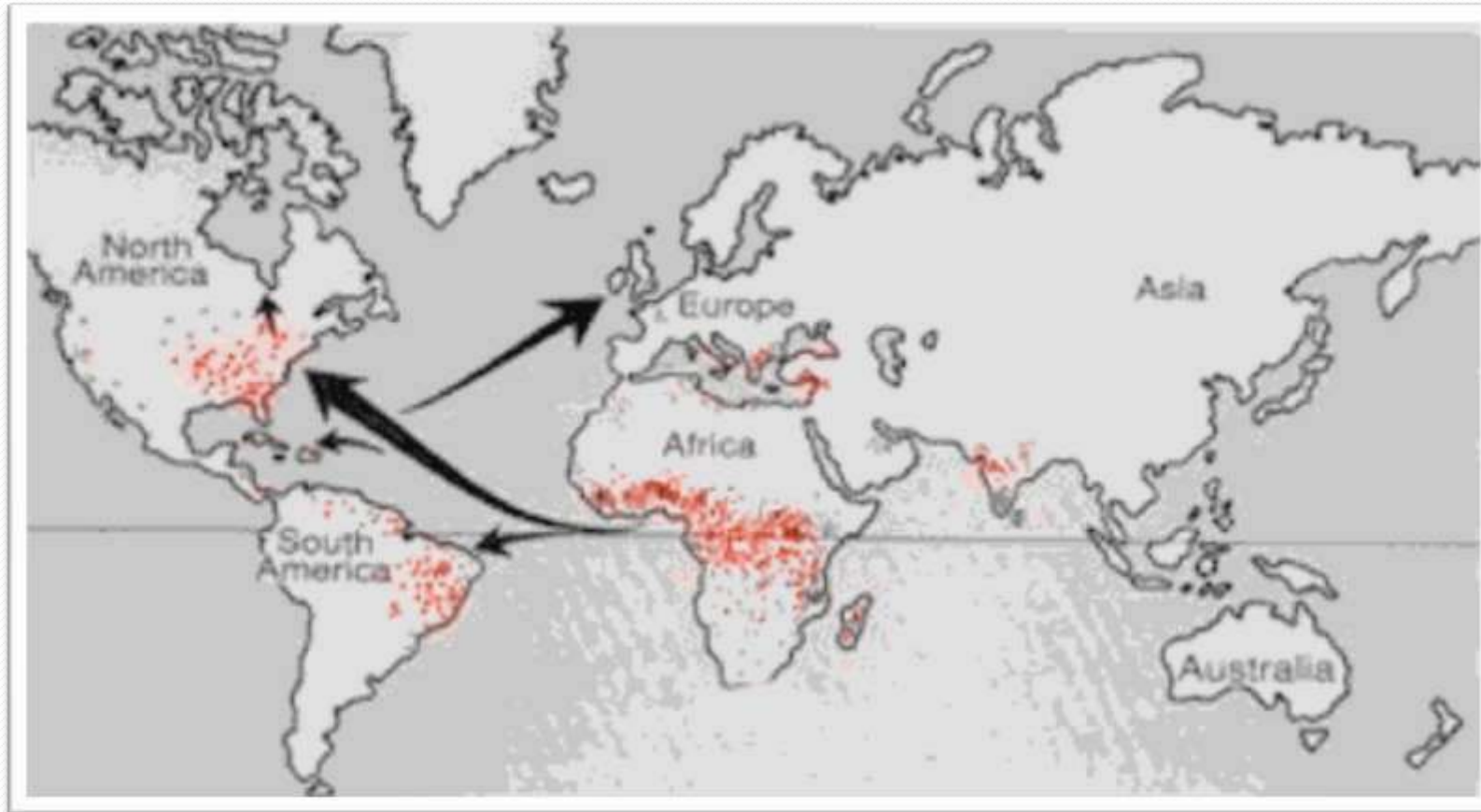


# Sickle Cell Disease

- RBCs disorder that causes the sickling of bi-concave shaped RBCs.
- There are many types:
  - \* Sickle cell Anemia.
  - \* Sickle cell Trait.



# Distribution of Sickle cell Anemia

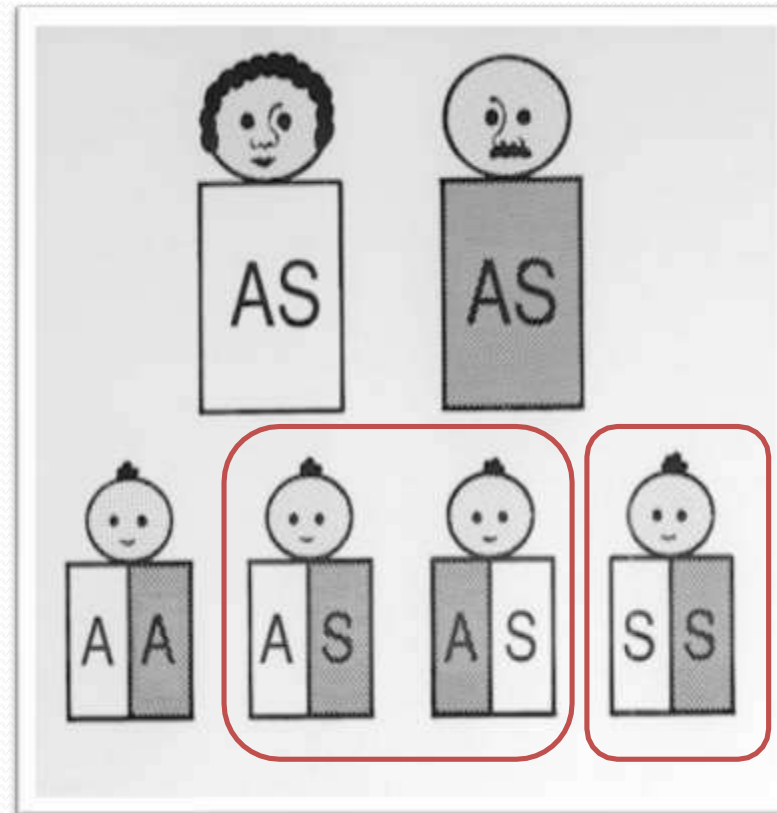


# Genetics

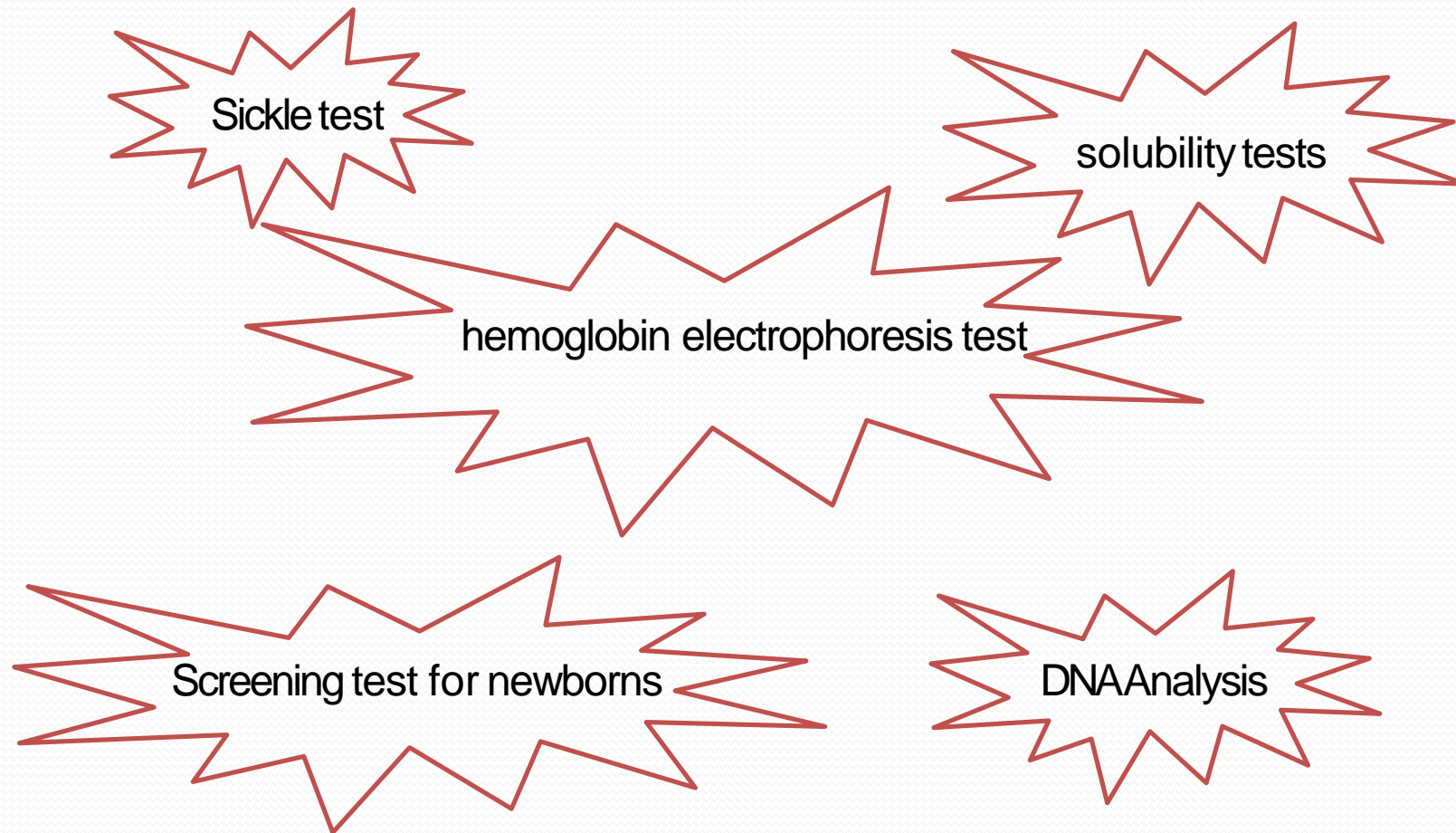
- It's a genetic disorder.
  - ✓ It's not contagious "You can't catch it".
  - ✓ You inherit it from your parents.

\*The person that receives the defective gene from both his parents will develop Sickle-cell disease.

\*The person who receives only one defective gene from either one of his parents will develop Sickle-cell trait.



# Diagnosis





# Signs and Symptoms

- Infection, dehydration are triggers but in most instances no predisposing cause is identified.
- They usually appear after 4 months of age.
- Most common signs are linked to Anemia and Pain.

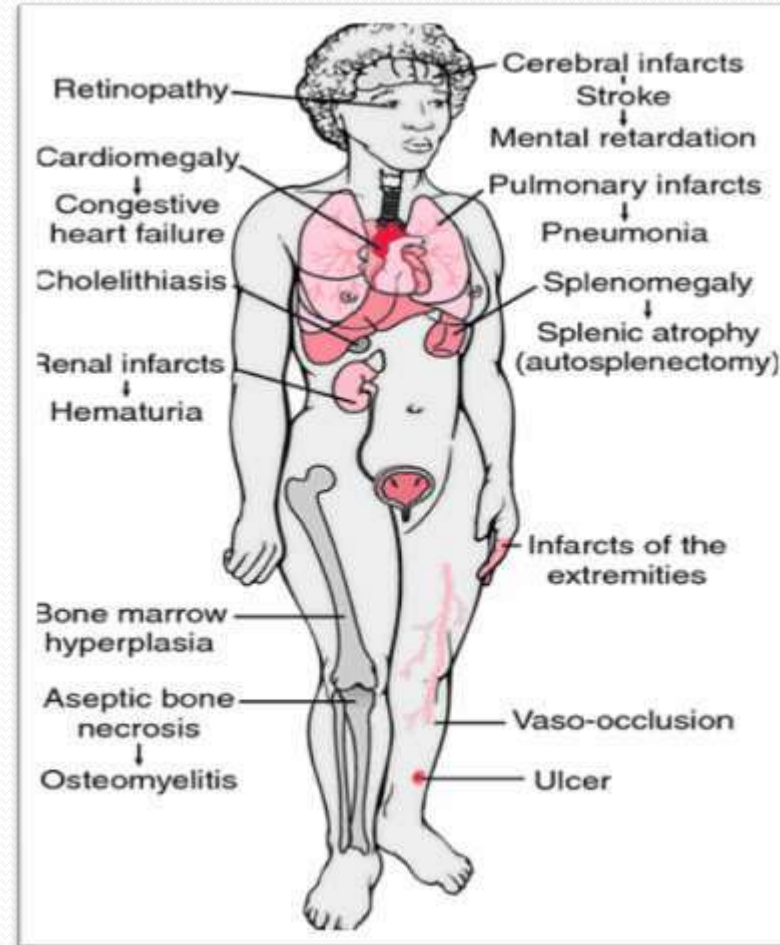
# Sickle cell crises

- Also known as “sickling crises”
- Different types
  - Vaso-occlusive
  - Aplastic
  - Splenic sequestration
  - Haemolytic
- Predisposing factors may include infection, dehydration



# Complications

- \***Hand-Foot syndrome** ➡ Pain, Fever, Swelling.
- \***Overwhelming post-splenectomy infection (OPSI)** ➡ treated with antibiotics and supportive care.
- \* **Acute chest Syndrome** ➡ Chest pain, Shortness of breath, Fever.
- \***Stroke** ➡ Learning problems, Long term disability, Brain damage, Paralysis, Death.
- \***cholelithiasis** (gall stones) & Cholecystitis ➡ Nausea, Vomiting, Jaundice, Sweating, Clay-coloured stool.



# Complications

\***Priapism** ➡ Damage to the Penis and Impotence.

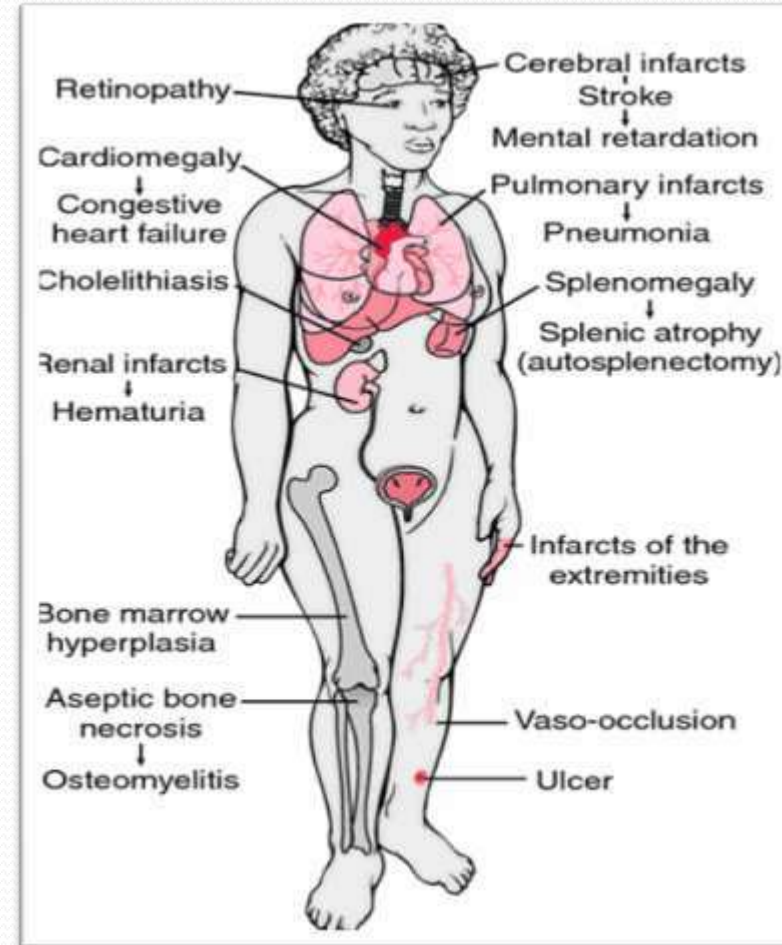
\***Retinopathy** ➡ Blindness.

\* **Sickle cell nephropathy** ➡ Chronic renal failure.

\***Pulmonary hypertension** ➡ Fatigue, Shortness of breath.

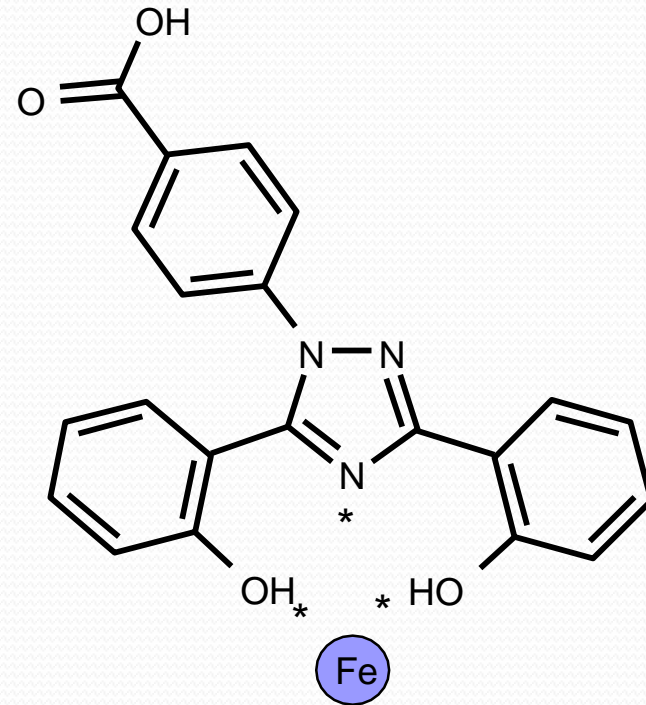
\***In pregnancy** ➡ spontaneous abortion.

\***Aseptic bone necrosis.**



# Management

- Blood transfusions:
  - Acute chest crisis
  - Decreases the risk for strokes
  - Deferasirox: iron chelator
- Folic acid daily intake
- Penicillin
- Malaria chemoprophylaxis



# Treatment

- **Hydroxyurea.**
  - Reactivates fetal Hb production
  - Decreases severity of attacks
  - Increases life span
  - More effective with Erythropoietin.
- **Bone marrow transplant** during childhood.
- **5-HMF.** This natural compound binds to red blood cells and increases their oxygen. This helps prevent the red blood cells from sickling.

# Prevention

- You can't prevent sickle cell anemia, because it's an inherited disease.
- If a person is born with it, steps should be taken to reduce complications.
- Genetic Counseling should be considered.
- A counselor can explain the risk of having a child who has the disease and can help explain the choices that are available.

