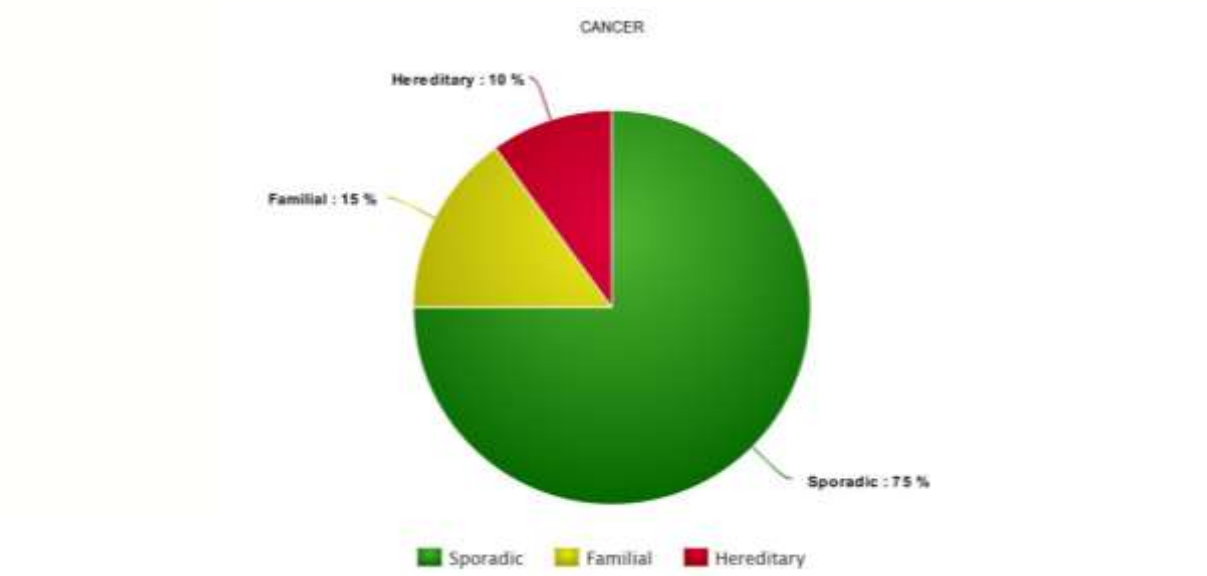
CANCER & GENETICS

What is Cancer?

Cancer is a disease whereby the body's cells begin to divide without stopping and spread into surrounding tissues.

Reasons for Cancer



1. ***Sporadic Cancers***

Most types of cancer are sporadic. The DNA mutations of your cells are not passed to you by your parents. Instead, the **mutations are all acquired** and can happen in certain cells of your body. Causes include – Ageing, Physical carcinogens eg ultraviolet, radiation, Chemical carcinogens eg smoking, Biological carcinogens eg virus (Hepatitis B, HPV).

2. ***Familial Cancer***

This involves having one or more cases of the disease in a person's family. If you have family members with a history of cancer, you have a slightly higher risk of developing it.

Abnormal cells are caused by a combination of germline and somatic sporadic mutations. Inheriting the mutations poses only a slight risk of developing the disease.

3. ***Hereditary Cancer***

This occurs when you can **inherit a mutated gene** from your parents. You can pass it on to the next generation. The genetic mutations are present in the cells of the ovaries and the testes, which produce the eggs and the sperm.

Every cell in the body will have the mutation. If you are born with the mutation, you are more likely to develop cancer than somebody who doesn't have it. The disease is also more likely to happen to you at a younger age.

Types of hereditary cancers include:

A) Breast

B) Ovary

C) Colon

D) Prostate

E) Pancreas

What is genetic testing?

Genetic testing looks for specific inherited changes (mutations) in a person's genes. Genetic mutations may be insignificant, beneficial, neutral or harmful to health. Mutations that are harmful may increase a person's risk of developing cancer. Inherited mutations are thought to play a role in about 5 to 10 percent of all cancers.

Who should consider genetic testing for cancer risk?

Many experts recommend that genetic testing for cancer risk should be strongly considered when all three of the following criteria are met:

- The person being tested has a personal or family history that suggests an inherited cancer risk condition
- The test results can be adequately interpreted
- The results provide information that will help guide future medical care

Features that may suggest Hereditary Cancer Syndrome include *Personal or Family History of the following* --

- Cancer that was diagnosed at an unusually young age
- Multiple different types of cancer in the same person
- Cancer that has developed in both organs in a set of paired organs eg both kidneys or both breasts
- Several family members with the same type of cancer (for example, a mother, daughter, and sisters with breast cancer)
- Unusual cases of a specific cancer type (for example, breast cancer in a man)

How is genetic testing done?

The test is done using a blood sample. The sample will be kept in a special kit, then sent to an approved genetic testing lab in US whereby the genes are analysed for mutations.

Genetic Tests Available	Price Inclusive of Consultation & GST
Breast Cancer Genetic Panel – BRCA 1 & BRCA 2	$3500
Ovary Cancer Genetic Panel (25 gene tests)	$5600
Colon Cancer Genetic Panel (17 gene tests)	$4000
Prostate Cancer Genetic Panel (14 gene tests)	$5600

Interpretations of genetic test results

The results will be ready in 3- 5 weeks. There are 3 possible results: positive, negative, variant of unknown significance (inconclusive).

Positive test result = Mutation associated with hereditary cancer syndrome found, indicating increased risk of developing certain cancer in future. This means that preventive strategies will be essential for self and family.

Negative test result = No mutations are detected.

Variant of Unknown Significance / Inconclusive test result = A genetic change is found, but it has not been previously associated with cancer in other people. Hence it cannot be confirmed if the person has increased risk of cancer.