

# Inheritance patterns through Generations

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## What does it mean if a disorder seems to run in my family?

If more than one person affected with any particular disease is commonly called as “running in a family. Some disorders affect many members of a family. This is mainly caused by gene mutations. It may be inherited from the parents of the person. Sometimes gene mutation won’t be a reason for the changes and it can be influenced by environmental factors like dietary habits. Sometimes both genetic and environmental factors are responsible for some disorders.

We can’t easily identify the reasons of any disease and predicting the inheritance also highly impossible sometimes. A patient’s family history must be carefully determined by a Doctor. These detail helps him to identify the hereditary details of family and extended family members.

## Degrees of Relationship

Degrees of relationship	Examples
First-degree relatives	Parents, children, brothers, and sisters
Second-degree relatives	Grandparents, aunts and uncles, nieces and nephews, and grandchildren
Third-degree	First coui

## Disorders seen in more than one generation of a family

What are the different ways in which a genetic condition can be inherited?( H 3)

Some genetic disorders can occur by the single mutation. This may usually inherited in one of several straight forward patterns, depending on the gene involved:

### a. Inheritance pattern: Autosomal dominant

If any pne of the parent has a affected gene results with Autosomal dominant disorders tend to occur in every generation of an affected family. Example Huntington’s disease.

## Huntington’s disease

### B.Inheritance pattern: Autosomal recessive

Autosomal recessive disorder results with the presence of two mutated copies of the gene in each cell .An affected person usually has a carrier parents who each carry a single copy of the mutated gene. Autosomal recessive disorders are not seen in every generation of the infected person. Example: Sickle cell anemia.

### **C. Inheritance pattern: X-linked dominant**

If mutation occurs in X chromosomes these X-linked dominant disorders are caused. The chance of receiving an X-linked dominant disorder differs between men and women. An important fact to be noted is men cannot pass this disease to Son as he can pass only Y chromosome to a son. So the women are more frequently affected than males. Families with an X-linked dominant disorder often have both affected males and affected females in each generation. Examples: Fragile X syndrome

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