X-LINKED INHERITANCE

INFORMATION FOR PATIENTS

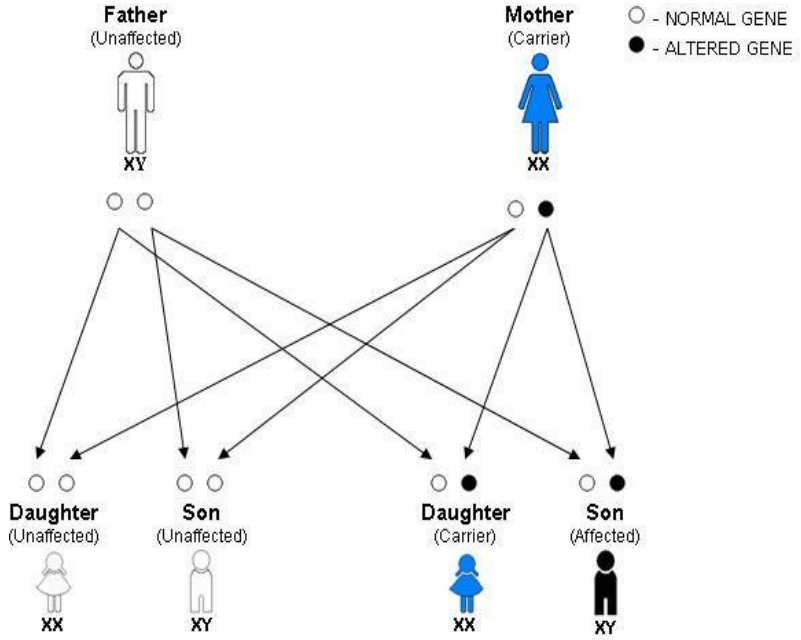
Genes are the unique set of instructions inside our bodies which make each of us an individual. There are many thousands of different genes, each carrying a different instruction. If a gene is altered, it can cause a genetic condition or disease. This gene alteration is sometimes known as a mutation. We have two copies of each gene. One copy is inherited from each of our parents. When we have children, we pass on only one copy of each of our genes. Genes lie on tiny structures called chromosomes. Women have two X chromosomes and men have one X and one Y chromosome. The Y chromosome is much smaller than the X chromosome and contains fewer genes.

WHAT DOES X-LINKED INHERITANCE MEAN?

X-linked conditions occur when an altered gene is located on the X chromosome. If a woman has an altered gene on one of her two X chromosomes, then she will be a healthy carrier. She is healthy because she has a second normal copy of the gene on her other X chromosome. If a man has an altered gene on his X chromosome, then he will be affected as he has only one X chromosome.

HAVING CHILDREN

The diagram overleaf shows an X-linked pattern of inheritance. If a woman carrier has a boy, there is a 50% (1 in 2) risk that the boy will be affected by condition caused by the altered gene that she carries. If a woman carrier has a girl, there is a 50% (1 in 2) risk that the girl will inherit the altered gene. If this happens, she will be a healthy carrier, like her mother.



When men who are affected by X -linked conditions have children, all of their daughters inherit the altered gene on their X chromosome. These daughters will all be healthy carriers.

Men do not pass on their X chromosomes to their sons. Therefore, all the sons of men with X-linked conditions are completely normal.
Sometimes boys are born with X-linked conditions even though their mothers are not carriers. When this happens, it is particularly important to get specialist advice about future pregnancies.

Your local genetics service:

South East of Scotland Clinical Genetic Service:	MMC, Western General Hospital Crewe Road South, Edinburgh EH4 2XU Telephone: 0131 537 1116
North of Scotland Genetics Service:	Department of Clinical Genetics Ashgrove House, Foresterhill Aberdeen AB25 2AZ Telephone: 01224 552120

East of Scotland Genetics Service:	Human Genetics Unit Level 6, Ninewells Hospital Dundee DD1 9SY Telephone: 01382 632035
West of Scotland Genetics Service:	Level 2A Laboratory Medicine The Queen Elizabeth University Hospital 1345 Govan Road, Glasgow G51 4TF Telephone: 0141 354 9201