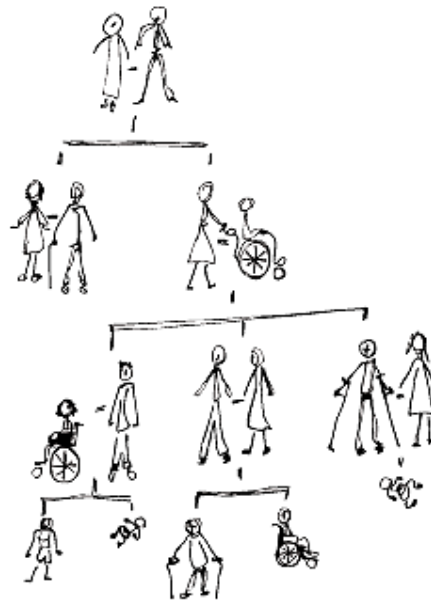


CROSS-CURRICULAR MATERIALS FOR KEY STAGE 4
(SCOTTISH CERTIFICATE OF EDUCATION - STANDARD GRADE)



Genes and You

Teaching about genetics from a human perspective

by Gill Mullinar

GENETIC INTEREST GROUP

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GENETIC CHROMOSOMAL CONDITION CARDS

GENETIC CHROMOSOMAL CONDITION CARDS ON THE FOLLOWING:



GENETIC BREAST CANCER

Inherited susceptibility to Breast Cancer

WHAT IS GENETIC BREAST CANCER?

There are two genes (BRCA1 and BRCA2) which that have so far been identified, and if inherited as faulty, increase a woman's chance of getting breast cancer,. However, breast cancer is very common (about 1 in 9 women in the UK will develop breast cancer at some time in their life and about 34,000 new cases are recorded each year),, and only a small proportion of these breast cancers (about 5-7%) are due to such an inherited susceptibility.

GENETIC BREAST CANCER;WHAT CAN WOMEN DO IF THEY THINK THEY ARE AT RISK FROM A GENETIC BREAST CANCER SUSCEPIBILITY?

It is important to be aware that even if your mother, or another close female relative, has breast cancer, this does not automatically mean that there is an inherited susceptibility to breast cancer in your family. This could have happened by chance, particularly as breast cancer is so common. Women with a strong family history of breast cancer (i.e. three or more close relatives with the disease, or perhaps two if those relatives were diagnosed when in their 30s or 40s, and when all affected relatives are on the same side of the family), could ask their doctor to refer them to their local department of clinical genetics for further help and advice.

HOW IS GENETIC BREAST CANCER PASSED ON?

The pattern of inheritance of genetic breast cancer is called autosomal dominant. This means that in families affected by genetic breast cancer, each child of someone who has an inherited susceptibility has a 50% (1 in 2) chance of inheriting the faulty gene. Women who inherit a faulty BRCA1 or BRCA2 gene have up to an 80% chance of developing breast cancer over their lifetime and can have an increased risk of ovarian cancer also. It is unusual for men to get breast cancer but they can do so, but their risk is about 6% if they carry a faulty BRCA 2 gene. They can also pass on the genetic susceptibility to their children. This means that a genetic susceptibility to breast cancer could occur in a family after a couple of unaffected generations because it has been passed on down the male line.

OTHER INFORMATION

- Tests for changes in breast cancer susceptibility genes are not available to everyone, and tend to be offered only to individuals with a strong family history of breast/ovarian cancer; these tests are available at all specialist genetic units in the UK. Before any woman is offered a test, geneticists need to be certain that she is at high risk of genetic breast cancer and that she wants to have the test. While she is deciding whether or not to have the test, she will be offered counselling to help her think about her options and what the results of the test might mean for her and her relatives. It is usual to test a woman in a family who has had breast (or ovarian) cancer to identify the genetic "fault" in BRCA 1 or BRCA 2 in that family before being able to offer to test their unaffected but at risk relatives.
- If a woman has a test and the results show that she has inherited a fault in one of the breast cancer genes, she has various choices. She should be 'breast aware', which means knowing what her breasts look and feel like normally and recognising when there is a change which needs investigating. She may also be eligible to be screened regularly at a specialist clinic. A few women chose to have surgery to remove both breasts before there are any signs of breast cancer which very much reduces their chances of developing the disease. This operation is called a prophylactic mastectomy. Removal of the ovaries not only very much reduces the risk of ovarian cancer, but also lowers the risk of breast cancer, so some women chose to have this type of surgery.
- BRCA1 was found in 1994 on chromosome 17, and BRCA2 was found a year later on chromosome 13. Faulty copies of the BRCA1 gene are believed to be present in about half of the families in Britain with strongly inherited breast cancer and BRCA2 in about a third of families, so there are almost certainly other breast cancer genes still to be discovered.
- If you are interested in finding out more about Inherited breast cancer, you can write (enclosing an A5 stamped addressed envelope) to: Breast Cancer Care, Kiln House, 210 New Kings Road, London SW6 4NZ. A telephone helpline for anyone with a breast-related problem or Breast Cancer enquiry is also open from Monday to Friday 10 am. - 5 pm Saturdays 10 am – 2pm Nationwide helpline (calls are free) 0808 800 6000 <http://www.breastcancercare.org.uk/Home>