

GENOME GENERATION

Guide to scenario 2

JILL AND SCHIZOPHRENIA RISK



This scenario is set in the future and assumes that people will be able to find out this information through a recreational genotyping kit.

Summary: Scenario 2 deals with a woman (Jill) who has no knowledge of her father's family history. She has a husband and a young baby and pays to be genotyped to get a better understanding of her genetics. She does not know that the test will reveal that she has a rare chromosome deletion, associated with a higher than normal risk of developing schizophrenia.

Initial question: If you were Jill would you want to know that you have an increased risk of schizophrenia?

Key issues: Incidental or unexpected findings; Would you want to know? Impact on families

SENSITIVE ISSUES & GUIDANCE

This scenario is appropriate for GCSE and A-level.

The discussion introduces the fact that genetic testing may reveal unexpected findings and explores the impact on an individual (and their family) of discovering something unexpected.

Be aware that people often have misconceptions about schizophrenia. Remind the group to read the Info cards to find out about the condition.

QUESTIONS TO DISCUSS

Can Jill know for sure whether she will develop schizophrenia?

Schizophrenia commonly presents itself in women during their late twenties or early thirties but very rarely past the age of 40. As Jill is turning 30 years old if she is going to start showing symptoms, this is likely to happen quite soon.

Will there be genetic counselling to accompany the test?

This sort of online genotyping provides minimal (if any) genetic counselling to prepare and support individuals about what the tests may uncover. Should Jill receive genetic counselling to interpret the

results and her risk of developing such a life changing condition?

Could Jill finding out that she is at higher risk of developing schizophrenia be beneficial?

Schizophrenia can be difficult to diagnose and is often misunderstood. An awareness of a genetic predisposition to schizophrenia may lead to better monitoring and quicker diagnosis. Often, the earlier medication begins, the better the prognosis.

How will the test results affect her family?

Jill and her family may be overly concerned and look for signs of the disease when it is not present.

Whether Jill develops the condition or not, she may have passed the predisposition on to her daughter. At what point should Jill tell her daughter?

Will revealing her risk of developing the condition lead to discrimination?

If Jill reveals that she is at risk of developing schizophrenia, it may lead to stigma from others. It may also have an impact on her employability or insurance premiums. Who should know that Jill has a genetic predisposition for the disease?

FURTHER INFORMATION – WHAT THEY MIGHT NEED TO KNOW

What causes schizophrenia?

Schizophrenia tends to run in families. Studies of identical twins show that if one twin has the disease, the other has a 1 in 2 chance of also developing it. In non-identical twins, the chance is 1 in 7. When compared to the risk in the general population (1 in 100), this suggests a considerable genetic influence. There are some lifestyle related triggers for schizophrenia. Stress seems to be the main psychological trigger. Research suggests that traumatic head injury, especially in childhood, could lead to development of the disease, in susceptible individuals. Drug abuse, especially of cannabis, cocaine, LSD or amphetamine is also a potential trigger for schizophrenia.

Micro-deletions and schizophrenia

In 2010, a study showed that deletions of a region of chromosome 3 were associated with an increased risk of schizophrenia. Genes in this region had already been associated with intellectual function. A deletion of a small region of chromosome 22 has also been associated with an increased risk of schizophrenia.

Socio-economic outcomes for schizophrenia sufferers

Only 10-20% of people with schizophrenia are in employment. Barriers to employment include: discrimination, fear of losing government financial support and a lack of professional help.

FURTHER READING

The following news stories can be used in addition to the Info cards to provide extra background information to help students understand the major issues raised in this scenario.

Scientists make schizophrenia breakthrough

www.bbc.co.uk/news/health-14411746

Taking stock of schizophrenia

www.bbc.co.uk/news/uk-15535626

FURTHER INFORMATION FOR STUDENTS

Students can find out more information about schizophrenia from the following websites:

NHS Choices

NHS Choices is produced by the National Health Service (NHS) and provides information on a range of different health issues. The page below provides information on schizophrenia.

www.nhs.uk/conditions/Schizophrenia/Pages/Introduction.aspx

Mind

Mind is a mental health charity that raises awareness of mental health issues and provides support and advice for anyone affected by mental health problems.

www.mind.org.uk/help/diagnoses_and_conditions/schizophrenia

Rethink Mental Illness

Rethink Mental Illness is a charity that provides information and support to anyone whose lives are affected by mental health problems.

www.rethink.org/about_mental_illness/mental_illnesses_and_disorders/schizophrenia/?shortcut=schizophrenia

FOLLOW UP ACTIVITY

Ask the students to produce an information leaflet or webpage for the general public explaining what schizophrenia is and the possible genetics of the disease.

The following websites can provide information the students may use in the leaflet or webpage:

www.genetics.edu.au/genetics/Genetic-conditions-support-groups/FS58KBS.pdf

www.bbc.co.uk/news/health-14411746

www.nature.com/news/2011/111031/full/news.2011.620.html

www.nhs.uk/Conditions/Schizophrenia/Pages/Causes.aspx