Victorian Clinical Genetics Services
Murdoch Childrens Research Institute
The Royal Children's Hospital
Flemington Road, Parkville VIC 3052
P (03) 8341 6201 W vcgs.org.au

percept™ NIPT fact sheet

High risk for XXY

This fact sheet is for women and their partners who receive a high risk result for XXY from the percept™ non-invasive prenatal test (NIPT) offered by Victorian Clinical Genetics Services (VCGS). This information may not be applicable to test results reported by other NIPT service providers.

As part of the service offered by VCGS, women and couples have the opportunity to discuss their result with a genetic counsellor at no additional cost. Genetic counsellors are experts in assisting people to understand genetic test results and make informed decisions about further testing options.

What does this result mean?

NIPT is a way for women to get an accurate estimate of the chance that their baby has one of the most common chromosome conditions: trisomy 21 (Down syndrome), trisomy 18 and trisomy 13. The test may also detect whether there are extra or missing copies of the sex chromosomes, X and Y.

A high risk result for XXY **does not** mean the baby definitely has XXY.

A high risk result for XXY indicates that the baby has a high chance of having XXY. However, NIPT is a screening test and only a diagnostic procedure (such as chorionic villus sampling (CVS) or amniocentesis) can confirm if the baby has XXY.

What is XXY?

Usually a male has two sex chromosomes: an X and a Y. Males who have XXY, also called Klinefelter syndrome, have one Y chromosome and two copies of the X chromosome.

Males with XXY may be taller than average for their family and are usually infertile. They may also have some language and learning difficulties. Treatment options are available to help boys and men with XXY reach their full potential.

Possible explanations for this high risk result:

There is a high chance that the baby has XXY. However, the only way to provide a definitive diagnosis is to have a diagnostic procedure (CVS or amniocentesis) with chromosome testing.

In some cases, high risk results for XXY may represent 'false positive' test results. A false positive result means that although NIPT indicates a high risk of XXY, the baby does not have this condition.

Possible causes of false positive results for XXY from NIPT include:

Statistical false positive result
This is an incorrect result with no apparent biological cause.

Maternal DNA variation
Rarely, a high risk result on NIPT may be caused by a variation in the mother's DNA. If this is suspected, the laboratory will suggest further investigations.

Confined placental mosaicism (CPM)
This is caused by a population of cells in the placenta with an extra copy of the X chromosome. These cells are only in the placenta and are not present in the baby.

What are the next steps?

All women who receive an increased risk result for XXY should discuss this with their doctor.

Women should be offered the option of further testing (including testing in pregnancy or testing their baby after birth); however women do not need to have further testing. It is their choice.

Referral for genetic counselling may be helpful in supporting women and their partners with making decisions about further testing options.

What are diagnostic procedures?

CVS and amniocentesis are diagnostic procedures available during pregnancy that can identify for certain if the baby has a chromosomal condition such as XXY.

CVS involves passing a fine needle into the developing placenta (chorion) under ultrasound guidance and drawing a few small fragments of tissue into a syringe. CVS carries a small risk of miscarriage (1 in 500 or 0.2%)*, generally within two weeks of the procedure. CVS analyses placental tissue. If the cause of the high risk NIPT result is confined placental mosaicism, there is a chance the woman will need to also have an amniocentesis.

Amniocentesis involves the removal of a small sample of fluid from the sac around the developing baby. Under ultrasound guidance, a fine needle is inserted through the mother's abdomen to obtain the fluid. The fluid contains cells that are shed naturally from the fetus. Amniocentesis carries a very small risk of miscarriage (1 in 1000 or 0.1%)*, generally within two weeks of the procedure.

What are diagnostic tests?

After the CVS or amniocentesis procedure, chromosome analysis is performed. This can include FISH, karyotype, and microarray. These laboratory tests are considered diagnostic tests.

FISH: stands for 'Fluorescence In Situ Hybridisation'. This test looks at whether the cells contain the correct number of chromosomes for the common conditions (chromosomes 13, 18, 21, X, Y). This is a rapid, preliminary test with results available in 1-2 working days.

Karyotype: looks at the size, shape and number of chromosomes to determine whether there are any extra, missing or abnormal chromosomes present. Results are usually available in 10-14 days.

Microarray (or molecular karyotype): a detailed test that provides more information than the karyotype. This very sensitive test looks for extra or missing segments of DNA in the chromosomes. Results are usually available in 10-14 days.

*Akolelar R et al. *Ultrasound Obstet Gynecol*, 2015, Jan;45(1): 16-26.

Contact details

VCGS Prenatal Testing Team
Murdoch Childrens Research Institute
The Royal Children's Hospital,
Flemington Road Parkville 3052

P (03) 9936 6402 E perceptNIPT@vcgs.org.au
F (03) 8341 6366 W vcgs.org.au/perceptNIPT

The information on this fact sheet is based on a comprehensive assessment of outcomes from 15,000 women who have had percept™ NIPT.

Only an invasive diagnostic procedure with chromosome testing can confirm if the baby has XXY.

Who can I speak to about this result?

It is recommended that women with a high risk XXY result discuss this with their doctor. Their doctor can refer them to speak with a VCGS genetic counsellor at no additional cost.

Alternatively, women and their partners can contact a VCGS genetic counsellor directly on 03 9936 6402.

Genetic counsellors are experts in communicating genetic information and assisting people to understand complex genetic results. They can support women in making informed decisions that are right for them and their family.

percept® cell-free DNA prenatal test