

# percept™ NIPT fact sheet

## Increased risk for rare trisomy

This fact sheet is for women and their partners who receive a result indicating an increased risk of a rare trisomy from the *percept* non-invasive prenatal test (NIPT) offered by the 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 their partners 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 detect extra or missing copies of the sex chromosomes (X and Y). *percept* is also able to identify an extra copy of all other chromosomes (called 'rare trisomies').

An increased risk result for a rare trisomy **does not** mean the baby definitely has that condition.

An increased risk result indicates that there is a possibility of the pregnancy having a rare trisomy. However as NIPT is a screening test, only a diagnostic procedure (such as amniocentesis) with chromosome testing can confirm if the baby has the condition.

## What is a rare trisomy?

Rare trisomies are seen infrequently at birth and can be associated with an increased risk of missed or early miscarriage, a chromosome condition in the baby, restricted growth of the fetus and premature delivery. Rare trisomies involve chromosomes other than 21, 18, 13, X and Y and occur when the baby or the placenta has three copies of a chromosome instead of the usual two. Most pregnancies with a rare trisomy miscarry before 10-12 weeks of gestation. A pregnancy that progresses beyond this gestation may have mosaicism, which means there is a mixture of normal cells and cells with the rare trisomy.

## Possible explanations for this increased risk result:

There are a number of reasons why *percept* NIPT may give an increased risk result for a rare trisomy.

- **The baby may have a genetic condition caused by a rare trisomy.** This can occur because:
  - the baby has a mixture of normal cells and cells with a rare trisomy (mosaicism)
  - in some cases, it is possible for a trisomy to have naturally corrected during early development. For some chromosomes, this process of correction may cause another genetic condition in the baby.
- **The rare trisomy may only be present in the placenta.** This is referred to as confined placental mosaicism (CPM). CPM occurs when there is a population of cells in the placenta with the rare trisomy. These cells are present in the placenta and are not present in the baby. In some cases, rare trisomy in the placenta may impact on growth of the baby and functioning of the placenta.
- **Co-twin demise:** In some twin pregnancies a rare trisomy may have been present in one twin and that twin may have been lost early in pregnancy because of the rare trisomy. Some of the DNA from the demised twin may still be circulating in the mother's blood stream which can cause a high risk rare trisomy result.
- **Maternal mosaicism:** Very rarely, some cells in the mother have the rare trisomy. If this is suspected, further testing of the mother may be recommended.
- **Statistical false positive result:** Rarely, the statistical analysis can be incorrect with no apparent biological cause.

*The only way to provide a definitive diagnosis during pregnancy is to have an amniocentesis with chromosome testing.*

## What are the next steps?

All women who receive a result showing an increased risk of a rare trisomy should discuss this with their healthcare provider. Women should be offered the option of further testing. 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.

### Further testing options:

- A follow-up fetal ultrasound is recommended. This may show the pregnancy has miscarried. This is more common early in pregnancy (e.g. if *percept* was done at 10 weeks).
- If abnormalities are seen on the ultrasound, it is more likely that the baby has the rare trisomy. A CVS can be performed at 12-13 weeks to provide additional information. An amniocentesis may also be required. The need for an amniocentesis may depend on the ultrasound findings and the CVS results.
- If no abnormalities are seen on the fetal ultrasound, it is more likely that the baby does not have the rare trisomy. However, there is an increased chance the baby may have mosaicism for the rare trisomy or a genetic condition associated with the rare trisomy. It is suggested that the woman consider having an amniocentesis at around 15-16 weeks gestation. Amniocentesis will give the most definitive result in these circumstances. Depending on the rare trisomy that was found on *percept*, other genetic testing may be recommended.

## 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. Because rare trisomy is sometimes present in the placenta but not the baby, an amniocentesis is usually the preferred procedure in these circumstances.

**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 cells with the rare trisomy are detected in the CVS sample, the woman may also be offered an amniocentesis to determine whether the rare trisomy is present in the fetus. It is for this reason that VCGS suggests waiting for an amniocentesis if the 12-13 week ultrasound is normal.

**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). In some cases where the *percept* result indicates a high risk of rare trisomy, FISH specially designed for the rare trisomy may be offered. 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.

# VCGS data on file (2017).

Only a diagnostic procedure with chromosome testing can confirm if the baby has a rare trisomy or a genetic condition associated with a rare trisomy.

## Who can I speak to about this result?

It is recommended that women with a result indicating the possibility of a rare trisomy discuss this result with their healthcare provider. Their healthcare provider can refer them to 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.

## Contact details

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The information on this fact sheet is based on a comprehensive assessment of outcomes from 30,000 women who have had *percept* NIPT#.

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cell-free DNA prenatal test