Diagnosis of Prader-Willi Syndrome

Pre-natal testing for Prader-Willi syndrome is available for families that are considered to be at high risk by having a child with the syndrome, and where molecular confirmation of the syndrome has been confirmed. However, standard prenatal chromosome analysis is unable to detect most of the mechanisms that are responsible for Prader-Willi syndrome. Therefore it is necessary to use other more complex forms of testing such as DNA methylation analysis.

An indication of Prader-Willi syndrome can be obtained using a diagnostic checklist developed by Holm et al. in 1993. This checklist is comprised of symptoms that a child with Prader-Willi syndrome would present at different ages of their life. The diagnostic criteria includes:

- Lack of foetal movement during pregnancy and an apparent lack of energy after birth
- Hypotonia- where the muscles are weak and the child appears floppy
- Feeding problems and slow growth in the first year
- Rapid weight gain after one year of age
- Hypogonadism- this is where puberty and sexual development is delayed due to under-active sexual reproductive systems (ovaries and testes).
- Cognitive impairment that usually results in a mild learning disability.

Whilst the use of the diagnostic criteria is considered to be accurate and useful, it is necessary for the diagnosis to be confirmed by molecular genetic testing. The most commonly used method of molecular testing is DNA methylation analysis.

Although this provides a definite diagnosis of Prader-Willi syndrome, molecular genetic testing does not show which mechanism is responsible for the missing genetic information. Therefore the use of genetic counselling can be sought to determine the type of chromosome defect that is responsible for the syndrome, and will provide you with further information in regards to the likelihood of having another child with the syndrome.

Deletion and maternal uniparental disomy are one-off incidents and the odds on having another child with Prader-Willi syndrome are the same as for the general population. In the case of rarer genetic causes, a second child with Prader-Willi syndrome is a possibility and pre-natal testing might be recommended.