IVF Children

Fertility Facts

Despite a slightly higher incidence of congenital abnormalities at birth, the research on the physical, mental and social health of IVF children is reassuring.

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Birth size and birth weight

On average IVF children are born a little earlier and have lower birth weights than naturally conceived children, which means more are considered to be 'Small for Gestational Age' (SGA). This is not the case for children born from frozen embryos. The reasons are unknown, but may be related to the higher hormone levels arising from ovarian stimulation in IVF affecting the uterine lining. Infertility itself may also have a contribution, since women who have experienced infertility but conceive naturally also have children with a lower birth weight on average.

Prematurity, SGA and outcomes such as cerebral palsy are much higher in twin pregnancies, which is why fertility clinics in Australia and New Zealand strongly support single embryo transfer.

Chance of Abnormalities

The chance of congenital abnormalities in children born after IVF or ICSI is about a third higher than for children conceived naturally, which means a chance of around 4 per 100 births instead of 3 per 100 births. There might be a slightly higher rate of chromosomal abnormality in children from ICSI (see the section on ICSI later in the booklet).

The chance of abnormalities such as Down Syndrome is the same in IVF and ICSI pregnancies as in the general population, which shows a rise with age, especially after the mid-30's. Many women having IVF are 35 years or older, and therefore need to consider whether they wish to consider non-invasive prenatal testing or prenatal diagnosis by amniocentesis or Chorionic Villus Sampling (CVS) if they became pregnant.

Recent studies suggest IVF and ICSI are probably associated with a higher risk of various rare disorders associated with the 'imprinting' of genes. Imprinting disorders occur in about in 1:10,000 children conceived naturally; with IVF and ICSI the rate probably increases to about 1:2,000. Your doctor can provide more information about these disorders.

If some of the cells are damaged during freezing and thawing of an embryo, the chance of that embryo implanting and giving rise to a child is lower than if the embryo does not sustain any damage, but there is no greater risk of abnormalities. At this early stage of embryo development, each cell of the embryo is capable of giving rise to an individual person.

Male infertility and ICSI

The chance of miscarriage may be slightly higher with male infertility. The chance of pregnancy and miscarriage does not

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seem to be affected by the number or appearance of the man's sperm. However, there is growing evidence that sperm DNA damage may reduce the chance of pregnancy and increase the chance of miscarriage.

For many men with non-obstructive azoospermia or severe oligospermia, the cause of infertility may be genetic. If the defective gene is on the Y chromosome, male children will inherit the same type of infertility, although its severity may vary. Many men who have azoospermia due to a congenital bilateral absence of the vas deferens (CBAVD) carry the gene for cystic fibrosis. Because of this, we screen both partners for cystic fibrosis when the man could have CBAVD. The screening tests used in New Zealand detect 91% of the gene mutations for cystic fibrosis, so a negative test does not totally rule out a person carrying cystic fibrosis.

Children from ICSI have a slightly higher chance of having an abnormal number of X and Y chromosomes - 0.6% instead of 0.2% in the general population. They also have a slightly higher risk of having abnormalities in the number of other chromosomes – 0.4% instead of 0.07%. Some of these abnormalities seem to have little or no effect, while others can be associated with infertility and/or some degree of mental retardation. They can be detected by prenatal tests using Chorionic Villus Sampling (CVS) or amniocentesis between 11-17 weeks of pregnancy.

Up to 15% of men with zero or very low sperm counts have small pieces of the Y chromosome missing. This loss of genetic material (called a 'deletion') usually leads to poor sperm production. As expected, boys conceived of fathers who have a Y deletion inherit the Y deletion themselves, and most will be infertile when they grow up.

Analysis of the man's chromosomes (called a 'karyotype') is advised unless the male infertility is due to an obstruction. A blood test to screen for Y deletions is available.

If you want to explore the implications of possible genetic abnormalities, we can refer you to the local regional genetics service.

Development of children from IVF and ICSI

IVF is a relatively recent technique, with the first birth in 1978 and relatively few children born until the mid-80s. There have been several large follow-up studies from the USA and various European countries that altogether include many thousands of children, mainly up to the age of 10. Physical, mental, and social development of IVF and ICSI children was similar to children conceived naturally.

Some studies indicate IVF children may be slightly taller, with this being more so for girls than boys. However, these differences are slight. Small differences have also been reported for blood glucose levels, triglyceride levels and blood pressure, but the IVF children are still well within the normal range for all children.

There is no evidence of a greater risk of cancer in children or adolescents from IVF treatment, nor is there any evidence of an increased risk of autism.