

## What does 'assisted conception' mean?

Assisted conception or assisted reproductive technology is any method used to help couples who cannot conceive naturally or who need IVF for other reasons. These include *in vitro* fertilisation (IVF) where an egg is fertilised with sperm outside of the body (*in vitro* meaning 'in glass', which is why the term 'test-tube baby' is often used). The "glass" is usually a flat plastic dish – no test tubes are involved!

Assisted conception can also include using a third party (egg or sperm donation), using methods to insert sperm directly into the woman's uterus (intrauterine insemination - IUI), transferring eggs and sperm into the woman's fallopian tubes (gamete intrafallopian transfer - GIFT), or even surrogacy, where another woman carries the embryo to full term and gives birth to the baby.

## Prenatal diagnosis or screening

These are the tests done to find out if an embryo or fetus has a particular condition, e.g. thalassaemia, sickle cell anaemia, cystic fibrosis, Huntingdon's disease or muscular dystrophy. Prenatal screening can also be used to determine whether the baby will be a boy or a girl. Examples of prenatal screening include amniocentesis and chorionic villus sampling.

## What is amniocentesis?

Amniocentesis is a procedure where a small amount of amniotic fluid containing fetal cells is collected by inserting a needle through the mother's abdominal wall. It is usually performed at around 16-18 weeks of pregnancy. The cells can be analysed for genetic abnormalities, such as Down's Syndrome.

## What is chorionic villus sampling (CVS)?

Chorionic villus sampling involves taking a small part of the placenta, which is then tested for genetic abnormalities. This can be done around the 10-12th week of pregnancy.

## Preimplantation genetic diagnosis (PGD)

This type of screening helps diagnose genetically abnormal embryos before they are implanted into the uterus.

What is a saviour sibling?

A 'saviour sibling' is a brother or sister who can donate life-saving tissue e.g. blood, bone marrow or stem cells to an existing child who is ill. A saviour sibling has the same type of tissue and is genetically very similar to his/her sibling.

## How does the 'saviour siblings process' work?

The process involves removing eggs from the woman's ovaries and fertilising with the man's sperm in a fluid medium in a Petri dish. Genetic and tissue typing tests are done on cells from the resulting 2-3 day old embryos. When an embryo is identified with the same tissue type and as the ill child but does not have the disease (him/herself), this embryo is implanted in the mother's uterus. When the new baby is (or babies are) born, stem cells are removed from the umbilical cord and stored for 4-6 months for transplanting to the ill child.

## An example of why this process might be used:

**Aplastic Anaemia:** A condition where the patient's bone marrow does not produce enough red or white blood cells or platelets. This means that people with aplastic anaemia bleed, bruise and have an increased risk of infection. To cope with the disease, regular blood transfusions or a bone marrow transplant are needed. Finding a perfect match for a bone marrow transplant is difficult as the donor must have very similar tissue to the recipient to avoid rejection. In this situation, saviour siblings can be used to provide the blood required for transfusion, or the bone marrow.