

If you have been asked to provide a semen sample for analysis, this fact sheet explains the process in more detail and outlines the various aspects of semen that we examine as part of assessing your fertility and developing a treatment plan.



THE FACTS ABOUT:

Semen analysis

Why do I need a semen analysis?

In around 40% of couples having trouble conceiving, the man's fertility is the main factor or a contributory factor. By analysing your semen we can see whether the various features fall within the normal ranges and if not, what treatment may be needed to improve your chances of conceiving. Like blood tests, semen analysis results fall on a spectrum for the various features and it's not usually a simple fertile-infertile result.

Producing your semen sample

Preparing to produce a sample

Before you produce a sample of semen for analysis, we ask you not to have sexual intercourse or masturbate for between two and seven days. This ensures our tests are accurate. Shorter or longer periods without ejaculation can cause unreliable results.

Your sample also needs to be produced at a time when you have not suffered from an illness with a fever within three months and have not been exposed to anything toxic to the gonads (for instance radiotherapy or chemotherapy). Please ask us if you are unsure whether a treatment or illness may affect your sperm analysis results.

Producing your semen sample

To get accurate results, we must have a totally fresh sample of semen to assess in our laboratory. This means we prefer you to produce a sample on site at our clinic for immediate testing. Samples are usually produced by masturbation or very occasionally by intercourse using a special condom without a spermicide (provided by the clinic). You will be given a private room and unhurried time to produce your sample. Most men find the thought of this a little embarrassing or uncomfortable but our staff will do their best to put you at ease.

In some circumstances we can agree for a sample to be brought into the clinic for analysis, provided it has been produced within an hour of testing.

Second sample

Sometimes we need two semen samples produced on two separate occasions to fully assess your semen but if your first sample is completely normal, this may not be necessary.

What is assessed in semen analysis?

We look for abnormalities in the number of sperm present in the ejaculate, the proportion of motile (swimming) sperm and the proportion of 'morphologically normal' sperm (this refers to the shape of the sperm. The World Health Organisation (WHO) redefined normal values for human ejaculate in 2010 as outlined below.

- **Volume:** The normal ejaculate volume is between 1.5 and 6 ml (about a teaspoonful).
- **Number of sperm present:** A normal specimen contains more than 15 million sperm per millilitre of ejaculate.
- **Motility:** This describes the proportion of the sperm in the sample that are swimming. 'Progression' describes how well the motile sperm are moving. The normal proportion of 'progressively motile' sperm is more than 32%.
- **Morphology:** Sperm morphology refers to the shape of sperm. In IVF programs, strict criteria are often used to measure sperm morphology. Men with fewer than 4% normal forms usually fail to fertilise without laboratory help.
- **Antisperm antibodies:** These can cause sperm to stick together; reduce their motility or ability to fertilise the egg so we test to see if they are bound to the sperm.

Possible results and what they mean

The fertility doctor assesses the results of your semen analysis and also looks at the woman's results and your joint history of trying to conceive. From this, the doctor will make a diagnosis and recommend treatment.

The male infertility factors that may be identified in your semen analysis are shown below. It is not uncommon for more than one of these semen characteristics to be seen in the same semen analysis.



Low sperm count (Oligozoospermia)

When the number of sperm in your ejaculate is low, the chances of a sperm reaching and fertilising the egg following intercourse is reduced.

In cases where the count is not too low, intrauterine insemination (IUI) may be an appropriate treatment (see separate fact sheet). This simply means the sperm are concentrated before being placed directly into the uterus.

More commonly, IVF (see separate fact sheet) may be recommended as fewer sperm are required and fertilisation can be achieved in the laboratory.

In severe cases, intracytoplasmic sperm injection (ICSI), may be recommended (see separate fact sheet). This is an IVF cycle where the sperm is injected directly into the egg in the laboratory.

Reduced motility and/or impaired progression (Asthenozoospermia)

When the number of actively swimming sperm in the ejaculate is very low, or if the way the sperm are swimming is not normal, the chances of a sperm reaching and fertilising the egg following intercourse may be reduced. When it is just the number of motile sperm that is low, IUI or IVF may be recommended as the motile sperm can be extracted from the ejaculate and concentrated in the laboratory. However, if progressive motility is severely impaired, the chances of fertilisation through IVF may also be low, so ICSI may be recommended.

Raised levels of abnormal sperm (Teratozoospermia)

Abnormal sperm have a reduced capacity to fertilise eggs or form viable embryos. When the number of normal sperm in the ejaculate is below normal, the chance that a normal sperm will reach and fertilise the egg may also be reduced.

In cases of mild teratozoospermia, IUI or IVF may be the best treatment because we can prepare a sample enhanced in the laboratory to maximise the number of normal sperm.

If the number of normal sperm is very low, we may recommend ICSI because the embryologist can examine individual sperm and identify the best sperm for injection into the egg.

No sperm present in the ejaculate (Azoospermia)

There are various reasons why there may not be sperm in your ejaculate. In some cases, the cause of azoospermia may be 'obstructive' which means that it is caused by a blockage in the route between the site of sperm production (the testes) and ejaculation. In some cases the cause of the blockage may be known, for example a previous vasectomy or failed vasectomy reversal.

In other cases, azoospermia may be 'non obstructive', which means that it is caused by the testes failing (or partly failing) to produce sperm. If there is no sperm present in your ejaculate, the doctor will talk to you in more detail about possible causes and treatment options.

In most cases of obstructive azoospermia, it is possible for a urologist or fertility specialist to surgically extract sperm from the epididymis (PESA) or the testes (TESA) and use the sperm to

achieve fertilisation in the laboratory through ICSI. See separate fact sheets about PESA / TESA and ICSI.

If there is no obvious obstruction, an exploratory Testicular Sperm Aspiration (TESA) may be carried out to confirm if sperm is being produced.

Sperm ejaculated into the bladder (Retrograde ejaculation)

Retrograde ejaculation is often seen in patients with diabetes, after certain types of prostate surgery, after lymph node removal or after spinal cord injuries. If the laboratory suspects this, we will analyse your urine immediately after ejaculation. If sperm are present in the urine, the specimen is checked for concentration, motility and morphology of the sperm. Sperm can then be retrieved and used for assisted reproduction.

Significant anti-sperm antibodies found (Immunological infertility)

Anti-sperm antibodies are large protein molecules that bind to sperm in the ejaculates of some men. These antibodies can have quite varied effects on fertility and in some men have no effect at all. They can be caused by testicular trauma, genital infections and previous vasectomy but in most cases their cause is unknown.

In some cases the antibodies cause the sperm to stick to one another and so reduce the number of free-swimming sperm available to fertilise the egg. Sometimes the antibodies seem to slow the sperm's ability to swim and, in other cases, they appear to directly interfere with the sperm's ability to bind to the egg. Depending on the level of antibodies found in your semen analysis and their effects, we may recommend IUI, IVF or ICSI.

WHAT CAUSES ABNORMALITIES IN A SEMEN ANALYSIS?

Abnormalities in the semen are usually due to poor sperm production in the testes but the cause of this is usually unknown. Occasionally abnormalities may be associated with previous infections or illnesses, surgery, smoking or excessive drinking. Also certain drugs, radiation and radiotherapy can affect sperm production. The presence of a varicocele (a condition of increased blood flow around the testicles due to dilated veins) may cause a temperature rise around the testicles, which can affect sperm production and motility.

Complete absence of sperm in the ejaculate as a result of testicular failure may be the result of a chromosomal disorder or previous infections such as the mumps. It can also be associated with problematical descent of the testes into the scrotum.

IS THERE ANYTHING I CAN DO TO IMPROVE MY SEMEN ANALYSIS?

If it is possible that below-normal semen measures are related to an illness or infection a few months before the semen analysis, then try waiting and repeating the analysis three months later and it may show an improved result. This is about the amount of time that sperm take to be produced.

You may be able to have a positive effect on sperm production with lifestyle changes such as reducing smoking, drinking and recreational drugs. For some men, dietary changes can also have



a positive effect on their semen.

These modifications are unlikely to entirely change the characteristics of your semen sample but will tend to improve them. We find the effects vary between men. Your specialist can recommend changes that may be useful for you.

What causes abnormalities in a semen analysis?

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Is there anything I can do to improve my semen analysis?

If it is possible that below-normal semen measures are related to an illness or infection a few months before the semen analysis, then repeat the analysis three months later and see if there is an improved result.

You may be able to have a positive effect on sperm production with lifestyle changes such as reducing smoking, drinking and recreational drugs.

For some men, dietary changes can also have a positive effect on their semen. These modifications will not entirely change the characteristics of your semen sample but will tend to improve it. We find the effects vary between men. Your specialist can recommend changes that may be useful for you.