

Male fertility

a guide to male fertility health



An illustration of several white sperm cells with long tails, swimming upwards. A single pink sperm cell is shown in the foreground, swimming towards the right. The background is a solid purple color.

Understanding *fertility* in men

Conceiving a healthy baby depends on a number of factors, including healthy sperm. In fact, male infertility is the second biggest issue after a woman's age so it's important to understand how the male reproductive system works.

Male factor infertility affects around half of all infertile couples, but the good news is that the most common causes of male infertility are easily diagnosed, and most can also be treated.

Producing sperm

Sperm production starts in the testes, where the hormone testosterone is also produced. An average of 100 million sperm are produced every day in healthy young men. After sperm is produced, it will need to travel along a long channel system starting at the epididymis, where they mature along the way, before exiting via the ductal structures called vas deferens and then out the urethra as part of the ejaculate. The entire process of sperm production and maturation takes just under 3 months. Any serious illness may affect sperm production for up to three months.

A sperm consists of the head, tail and mid-piece sections. To successfully fertilise an egg, the sperm will need to be able to move its tail (motility) to propel itself through cervical mucus to then travel through the uterus and fallopian tube to reach the egg. It will also need to be normally shaped in order to penetrate the outer shell of the egg to deliver its genetic package contained in the head.

There are four key components necessary to achieve satisfactory sperm production and a pregnancy:

- ◆ Normal hormonal stimulation from the pituitary gland
- ◆ Normal sperm production in the tubules of the testes
- ◆ An unobstructed sperm pathway
- ◆ Effective natural sperm delivery

What is male infertility?

Male infertility affects around half of all infertile couples. The most common causes include lifestyle factors; problems with sperm production, movement or shape; sperm antibodies; chromosome and DNA abnormalities; hormonal problems or erectile and ejaculation difficulties. Fortunately most causes are readily diagnosed and most can be treated or overcome to help a couple conceive.

Lifestyle factors

There are a number of ways that men can improve the quality of their sperm to help achieve a successful pregnancy with their partner. The lifecycle of sperm is only 72 days, so with a few lifestyle changes many men can improve the quality of their sperm within just a few months.

A few simple changes to your diet and lifestyle could help improve your overall health and fertility:

Stop smoking

Active and passive smoking harms sexual and reproductive health in both men and women. For men it can damage sperm DNA and increase the chances of miscarriage and likelihood of childhood cancers.

Do not use steroids

Many men are tempted to use anabolic steroids to improve their muscular strength and body fitness. However, these have a serious and sometimes permanent effect on sperm production. An absolute no-no for anyone planning a family in the near future.

Limit alcohol intake

Daily consumption of alcohol and binge drinking is known to affect your fertility. Try and follow the rule of 'everything in moderation'.

Maintain a healthy weight

Having a high or low BMI can affect sperm concentration and count. If you are overweight, try to reduce your weight as obesity can be linked to infertility. Even a small reduction in weight can make a difference.

Exercise regularly

Sperm quality is reduced when men are too sedentary. Sitting on testicles for hour's everyday can cause them to overheat and halt sperm production. Regular exercise will also help to maintain a healthy weight.

Stop Recreational Drugs and Steroids

Recreational drugs such as marijuana and cocaine can decrease sperm quantity and increase the number of abnormal sperm, while steroid abuse can result in shrunken testicles and halt sperm production.

Have frequent sex (or at least frequent ejaculation)

Sperm does not become more potent if a man abstains from sex or ejaculation, in fact, it is the opposite. Ejaculate or have regular sex 2 – 3 times per week so sperm is not stored for too long in the testicles where it can be damaged.

Eat a healthy diet

Men should eat a balanced diet - try to include more fresh vegetables, fruit and lean meat. Foods particularly rich in antioxidants help improve sperm health such as berries, pumpkin seeds and colourful leafy vegetables. You could also consider multivitamin supplements such as Vitamin C and E which are known for their antioxidant qualities.



Common myths about sperm



MYTH 1

Men that wear lycra and tight jeans harm their sperm.

False - in fact they are no more likely to have sperm production issues.

MYTH 2

Too many saunas, working in high temperature environments (e.g. steel smelts), or sitting in cramped conditions for hours on end (e.g. truck drivers) can affect your sperm count.

True - sperm like to be kept a few degrees cooler than the average body temperature of 37C. But, the occasional hot tub or sauna experience won't have a big impact.



MYTH 3



Acute viral illness, trauma, or a childhood operation for undescended testes or hernias of the groin can have a significant detrimental affect on sperm health.

True - it's important to be aware of previous medical conditions that might affect sperm health.

MYTH 4

Being hit in the groin during sports will affect your ability to have children.

False - while painful, it can only really have an impact on your fertility if it's extremely severe.



MYTH 5

Age doesn't affect a man's fertility.

False - Men's reproductive health is also affected by age. After 40, a greater number of DNA abnormalities occur in sperm.

MYTH 6

If you've been a father once you can do it again.

False - just because you've fathered a child previously, isn't a guarantee of future fertility as the quality of your sperm may have changed since.



MYTH 7

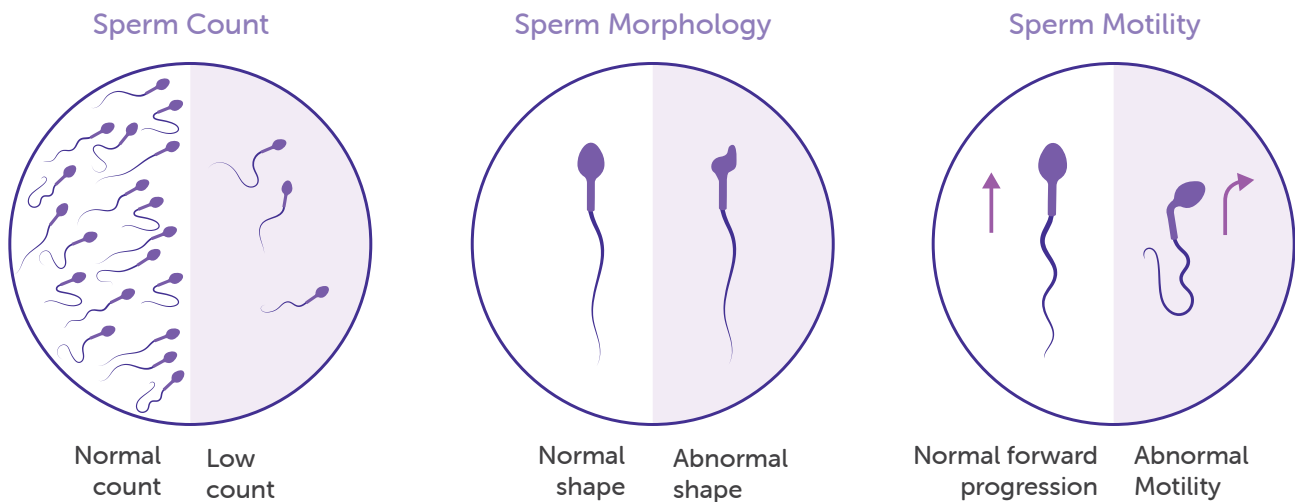
Sperm only survives an hour after ejaculation.

False - sperm can survive for several days in a woman's body.

What's involved in a semen analysis?

A semen analysis accurately measures the number of sperm, their motility (ability to move), their morphology (size and shape), and the volume and consistency of the ejaculated sample.

It's the most important male fertility test, and if you're having trouble conceiving, it's a relatively simple test that can be used to evaluate your fertility.



When to seek help

We recommend that you should book an appointment to see a fertility specialist together with your partner if you've been trying for more than 6 months when the female partner is over the age of 35, or for more than 12 months, if the female partner is under 35. This is because female age is a very important factor, together with your own sperm health.

1 TEST REQUEST FORM	2 PRODUCE A SEMEN SAMPLE	3 SEMEN ANALYSIS IN A LABORATORY	4 EXPLANATION OF YOUR RESULTS
<p>Ask your GP for a referral to IVFAustralia for a semen analysis and book an appointment.</p> <p>IVFAustralia runs semen analysis services at its clinics in Sydney, Central Coast, Newcastle and Canberra by appointment.</p> <div style="border: 1px solid purple; border-radius: 15px; padding: 10px; text-align: center;"> <p>Click here to book your semen analysis: BOOK NOW</p> </div>	<p>You will be required to produce a semen sample by masturbation, after at least three days abstinence from sexual activity. You should collect the entire ejaculated amount in a clean, dry container (provided by your Specialist or GP) and bring it to your appointment (within an hour of collection). If you prefer, you can produce the sample in a private room at one of our clinics.</p>	<p>Our <i>Andrology</i> scientists then assess the semen. They analyse and measure the number of sperm, their ability to move, their size and shape, and the volume and consistency of the ejaculated sample.</p> <p>A normal sperm count is at least 15 million sperm per ml, with at least a third showing good forward motility. If they find abnormalities, they usually do more tests to identify the nature and degree of any problems.</p>	<p>Your Fertility Specialist or GP will then explain your test results to you. The good news is that sperm have a lifecycle of around 72 days, so if your results indicate that there may be problems with your sperm, you may be able to improve this with diet and lifestyle changes. There are also treatments available that can allow you to still conceive if you have a low sperm count, poor sperm movement, or high numbers of abnormally shaped sperm.</p>

Male Infertility: causes, symptoms & treatments

Causes of male infertility

Male infertility is caused by problems that affect sperm production or the transport process such as:

- ◆ Blocked / absent vas deferens (tubes)
- ◆ Low sperm number and/or poor sperm production
- ◆ High numbers of abnormally shaped sperm
- ◆ Failure of sperm production
- ◆ Anti-sperm antibodies
- ◆ Sperm DNA fragmentation

In rare cases, a genetic disease such as cystic fibrosis or a chromosomal abnormality could affect male fertility. Some men may have more serious medical problems, such as low male sex hormones, or testosterone levels.

Problems with sperm production

The most common causes of male infertility are called:

- ◆ Azoospermia, no sperm cells are produced
- ◆ Oligospermia, where few sperm cells are produced
- ◆ Teratospermia, where a high proportion of sperm is abnormally shaped
- ◆ Blocked or absent vas deferens:
 - ◆ Vas deferens is the tube that transports the sperm from the testes
 - ◆ Genetic condition such as cystic fibrosis or chromosomal abnormality
 - ◆ High sperm DNA fragmentation that can affect a sperms ability to fertilise an egg
 - ◆ Sperm antibodies that can interfere with sperm motility and fertilisation

It's usually a good sign if you have ever conceived a baby with any partner in the past, but this may not mean that your sperm is compatible with your current partner.

What affects sperm quality?

- ◆ Health & lifestyle factors such as smoking, excessive drinking, drugs including steroids and recreational use, and weight and Body Mass Index
- ◆ Past medical conditions such as an undescended testes, hernia, STD or severe trauma.
- ◆ Acute viral illness can also temporarily affect sperm health.

Other causes of male infertility

Retrograde ejaculation

Retrograde ejaculation is a condition in which some or all semen flows backwards into the bladder rather than out through the urethra during ejaculation. Symptoms include producing little or no semen during ejaculation and can be diagnosed with a urine sample and semen analysis. If you are trying to conceive, retrograde ejaculation can be treated using **assisted reproductive technology** such as intrauterine insemination, IVF or ICSI procedures. Sperm can be collected from the urine or surgically retrieved from the testis. A fertility specialist can explain your options and help you choose the best path for you.

Immunological infertility

Male immunological infertility occurs when a man develops antibodies against his own sperm. These anti-sperm antibodies attach to the sperm affecting the way they move and their ability to penetrate a woman's cervical mucus and fertilise the egg. The presence of anti-sperm antibodies is commonly the result of **vasectomy**, injury or injection but it does not mean a man won't be able to conceive a child. Intracytoplasmic Sperm Injection (ICSI) can be used to help achieve a pregnancy.

Hyperprolactinemia

Hyperprolactinemia refers to elevated levels of the prolactin hormone in the blood stream. In men this can cause infertility by affecting the function of the testicles, decreased testosterone levels, decreased sex drive and abnormal sperm production. If hyperprolactinemia is affecting your fertility there are treatments available and your fertility specialist will guide you on the one most appropriate for you.

Occlusion

Occlusion refers to a blockage in a man's reproductive system, often in the epididymis or vas deferens, which prevents sperm reaching the urethra. Occlusions in men could be a result of injury, vasectomy or a congenital condition. It can be treated using a Vasovasectomy which is a surgical procedure which reconnects the ends of the vas deferens together or a testicular biopsy to surgically retrieve sperm from the testis for use in IVF or ICSI treatment.

How do you treat male infertility?

There are not many treatments that will improve the quality of the sperm themselves. However there are a number of treatments available to help a couple make the best of sperm quality as it is, and achieve a pregnancy. These include:

- ◆ Lifestyle changes
- ◆ Simple drug treatments such as Gonadotrophin to improve sperm numbers
- ◆ Intrauterine insemination if sperm abnormalities are not too severe
- ◆ In-vitro fertilisation with Intra-cytoplasmic Sperm Injection (ICSI) for severe sperm abnormalities which involves injecting a single sperm into each egg to achieve fertilisation
- ◆ Micro-epididymal sperm aspiration or (MESA) to surgically retrieve sperm from the epididymis if there are no sperm in the ejaculate or from the testes themselves with Testicular Sperm Aspiration (TESA)
- ◆ **Digital high magnification** for high level of DNA fragmentation to view and select the healthiest sperm
- **Donor insemination** in the most severe cases

Intracytoplasmic Sperm Injection (ICSI)

If you have a low sperm count, poor sperm movement, or high numbers of abnormally shaped sperm, then *Intracytoplasmic Sperm Injection (ICSI)* can be used as part of your IVF treatment cycle.

Digital High Magnification

For men with severely reduced levels of sperm morphology or with high levels of DNA fragmentation, *Digital High Magnification of Sperm* offers couples significant increases in fertilisation and pregnancy rates.

This technique allows the laboratory to enlarge images of sperm to over 7300x magnification (compared to 200-400x in standard ICSI), and pick the most appropriate sperm based on size and shape for fertilisation to be injected into the egg.

Microsurgery

Microsurgery can also be used to cure an obstruction, *reverse a vasectomy*, or surgically retrieve sperm.

Vasectomy reversal

A *vasectomy reversal* is a day surgical procedure performed to re-establish the sperm pathway following a vasectomy. The success of a reversal is dependent on the length of time since the vasectomy, amount of vas removed and presence of antibodies. An alternative to a vasectomy reversal is a sperm retrieval in conjunction with an IVF or ICSI cycle.

Advanced testing options

As we mentioned before, the semen analysis test is the most important test for assessing male fertility. If we find abnormalities in your initial semen analysis, we often require repeat tests to assess the type and degree of the problem, and whether it is a persistent feature. Sperm have a lifecycle of 72 days, so if you are ill or stressed it can temporarily affect your sperm production quality. Your specialist may also recommend a sperm DNA fragmentation test, or sperm antibodies test.

Sperm DNA fragmentation test

For some patients, we may recommend testing for DNA fragmentation within the sperm.

If you have experienced recurrent miscarriage, or several unsuccessful treatment cycles, this can help us diagnose and treat high levels of DNA fragmentation. It is also useful for men who have elevated leukocyte levels in the semen, have been exposed to toxic substances, are over 40 years of age, or have diabetes.

The SCSA (sperm chromatin structure assay) test measures the stability of the chromatin and provides an estimate of the level of DNA damage in the sperm.

Antioxidant therapy can be used to improve sperm health, or we may select the best sperm for *ICSI treatment* using *Digital High Magnification* of Sperm.

Sperm antibodies test

If sperm stick to each other head-to-head, tail-to-tail or in a mixed way, this is known as agglutination, and the presence of sperm antibodies may be the cause. Put simply, that means you've developed antibodies against your own sperm, and it can significantly affect sperm penetration into the cervical mucus, and the success of any IVF treatment. This can be diagnosed through more sophisticated techniques conducted as part of a semen analysis. This is most common in men who have had a vasectomy.

Male fertility preservation

Medical Fertility Preservation for Men

If you need to have treatment for cancer that may affect your fertility, there are options available to ensure you can still have children in the future.

Chemotherapy and radiotherapy can affect your sperm production – sometimes this is temporary but in other cases it may be permanent. Once your treatment begins, it may be too late to collect and preserve your sperm as it may already carry genetic damage. So, we strongly recommend you contact our Andrology Unit before commencing any cancer treatment.

Freezing sperm

Before you begin chemotherapy or radiotherapy treatment, some of your semen, containing sperm, can be frozen and kept until you wish to start a family.

Men who have to travel overseas or work in dangerous situations may also want to have their sperm frozen for use in the future.

How does sperm freezing work?

We collect samples in a private room in the Andrology unit, so our scientists can prepare and freeze the sperm as soon as possible before they die. It is also possible for you to collect the semen in your own home during sex, using a special non-toxic condom, which can be purchased from our Andrology units in advance.

If you are unable to collect semen or if there are no sperm in the semen, due to illness, we may be able to collect sperm directly from your testicles using a needle. This is called a testicular biopsy, and is performed in a day surgery under general anaesthetic. We can then use this sperm later in **ICSI treatment**.

Once the sperm is collected, it is mixed with a protective solution and the temperature is gradually reduced. About 25%-50% of the sperm will survive the process of freezing, and they can be stored for many years. There is an initial freezing fee and yearly fee (billed every six months) for sperm storage, which is not covered by Medicare or private health insurance.

1 in 6 couples in Australia struggle with infertility.

If you've been struggling to conceive for longer than 6 months, we recommended you and your partner make an appointment with our fertility specialist to help move you closer to your goal of starting a family.

Book an appointment today by calling 1800 111 483.



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