



Understanding your semen analysis results

Diagnostic semen analysis

Why have I been given this leaflet?

If you have been given this leaflet it means that you have either been asked to produce a semen sample or have received results for your semen analysis. The leaflet has been produced to help you understand what the terms mean that are used within the report or to explain information given to you by your healthcare professional.

What is diagnostic semen analysis?

This is when a laboratory (healthcare) scientist analyses your semen sample. The results obtained will provide an indication of whether there is anything that needs to be investigated further.

What is looked at in the laboratory?

There are two parts of semen analysis:

1. **Macroscopic analysis** – this is where the semen is looked at for volume, pH, viscosity and liquefaction. The colour may be noted if there is something that looks different to what is typically expected.
2. **Microscopic analysis** – this is part of the analysis where samples are prepared and examined under a microscope. This part of the analysis looks at: motility, concentration (including total sperm numbers per ejaculate), morphology, vitality, and round cells.

This leaflet will discuss these individual parameters, so you understand what the terms mean.

Once the sample is completely analysed, the results are then checked and reported. The lower reference limits are given at the end of the leaflet, so you know what the results are based on.

What are the macroscopic checks?

These checks are undertaken to help the healthcare professional interpret the results correctly. They can give important information about the functioning of accessory glands and the ejaculation process. The following parameters are looked at:

- **Volume** – this is a measure of how much semen is collected into the container in millilitres (ml). The laboratory asks for one ejaculate only. The volume is used to calculate the total number of sperm produced in the entire ejaculate.
- **pH** – this describes how acidic or alkaline your semen is. The lower the number, the more acidic your sample is. The higher the number, the more alkaline (basic) your sample is. A neutral pH is in the middle of this at pH 7 (pure water would be this value), whilst the normal pH for semen is 7.2 or higher.
- **Viscosity and liquefaction** – viscosity is a term used to describe how 'thick' or 'thin' the sample is. It is associated with liquefaction, which is a term used to describe the process where the gel-like substances in the semen (coagulants) are broken down, making the semen more watery. If semen is thicker than expected, it is reported as 'high viscosity'. If semen coagulants do not breakdown after 60 minutes, this is called 'delayed liquefaction'. These may be commented on in the report summary.

What are the microscopic checks?

These checks can give important information about the functioning of the testes and the sperm produced (if any). The following parameters are looked at:

- **Motility** – this is a term used to describe how the sperm are moving. They are categorised into four groups depending on speed and direction. Rapid progressive sperm move forward very quickly, slow progressive sperm move forward but slower, non-progressive sperm move in circles/on the spot and immotile sperm do not move at all. The motility is reported as a percentage (%).
- **Concentration and total sperm numbers** – concentration is simply a measure of numbers of sperm in a specific volume (per ml). Total sperm numbers are all the sperm that may be present in your whole ejaculate. These numbers give you information on the capacity to produce sperm and the functioning of the accessory glands.
- **Morphology** – this is a measure of the size and shape of the sperm as observed through very high magnifications. Normal sperm have a smooth, oval head, a mid-piece that joins to the head and a tail. Subtle differences can be observed under the microscope.
- **Vitality** – this test informs healthcare professionals of whether the sperm are alive or dead. The test uses a special stain that will only enter the sperm if they have damaged membranes (the outer part of the sperm). If stain enters them, they are classed as dead. This is only usually performed if there is evidence that a large proportion of sperm are not moving from the motility assessment.
- **Round cells** – this term is used for the cells in the sample that may be either immature germ cells (the cells that grow to become mature sperm) or leucocytes (cells that are usually called 'white blood cells' and are part of the immune system). If round cells are detected in numbers equal to, or greater than 1 million per ml, the scientists will attempt to differentiate these to give more clinical information.

What are 'normal' values?

There are a set of values produced by the World Health Organisation (WHO)¹ that act as a guide to healthcare professionals to interpret results. The lower reference limit is often used and can be described as the lowest possible value your results can be before they are classed as 'suboptimal'. It is important to know that having values below these lower reference limits does not mean you are infertile or sterile.

Information for Patients

The table below shows the lower reference values that your results are based on. To give you an example; if your volume was 1.3ml, this would be below the 1.4ml value given and therefore be classed as suboptimal.

Parameter	Lower Reference Limit
Volume (ml)	1.4
pH	7.2
Progressive Motility (%)	30
Total Motility (%)	42
Concentration ($\times 10^6/\text{ml}$)	16
Total Sperm Numbers	39
Morphology (% normal)	4
Vitality (% live)	54

Frequently asked questions

The doctor said I have no sperm. What does this mean?

This is also known as 'azoospermia' and means that the laboratory was unable to see any sperm in your sample. Your healthcare professional will often ask you to have another test to make sure that this was accurate. There are many causes of this, and it will need further investigation by a specialist. Sometimes it is possible to rectify the cause of the issue, or they can find sperm in the testicle. This is not guaranteed but will be looked at as part of your management.

I have blood in my semen, should I be worried?

Blood in places it is not normally found will always cause alarm. The fact is, there are several causes which may not be anything to worry about at all. Sometimes a foreskin may bleed and cause blood to leak into the sample. If the blood is from within i.e. not external, then your doctor may want to ask further questions or refer you to a specialist to investigate the cause.

What does it mean if I have a low sperm count?

This will depend on the numbers detected alongside the other parameters that are looked at in the laboratory. The healthcare professional will look at the results and determine what actions to take. This may be a repeat test, blood tests, a referral to a specialist or all of these.

My doctor said I have normal results. Does this mean there is nothing wrong with me?

A pregnancy is not guaranteed when you have a normal semen analysis. Infertility is an issue of the couple and sometimes, all results can come back normal and there still won't be a successful pregnancy. Semen analysis may give 'normal' results but there could be other aspects not tested during this that may impact their ability to fertilise an egg.

Do recreational drugs affect semen analysis results?

Recreational drugs are those that are used without medical supervision and can be legal or illegal. They include codeine, morphine, heroin, cocaine, LSD (acid), marijuana (cannabis) and anabolic steroids. This is not a comprehensive list but gives some examples for you. Some of these drugs can impact you in different ways, some not at all, whilst some may stop the production of sperm completely! Discuss the use of these drugs openly with your healthcare professional or andrologist so that they can use the information to determine if they are contributing to your results.

I have started some medication recently. Will this affect my results?

This will depend on the medication that you are taking. Some may have an impact on sperm production or maturation. Your doctor should know what you are taking and will be able to advise you. If you are concerned, contact your doctor, and ask them about this. Whilst attending andrology, you will be asked about recent medications by the healthcare scientist.

I have been ill recently; will this affect my results?

Some illnesses may have an impact on your sperm. An example could be if you have recently contracted flu (influenza). This will often cause a fever (high temperature) which can impact sperm motility, concentration, and morphology. Discuss any illnesses you have had with your doctor and healthcare scientist so that they can interpret your semen analysis results accurately. There may not be any impact at all, so try not to worry!

Further information

If you would like to discuss anything you have read in this leaflet or have questions that have not been covered, please contact the laboratory, your doctor or the person that is looking after you clinically.

The Laboratory details are below:

Tel (main laboratory): **0121 424 9717**

Email (not secure): Andrology@uhb.nhs.uk

Reference

1. WHO Laboratory Manual for the Examination and Processing of Human Semen. 6th Edn. Geneva: World Health Organisation (2021).

Andrology

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If you require this information in another format, such as a different language, large print, braille or audio version please ask a member of staff or email interpreting.service@uhb.nhs.uk