

These notes are to help with interpretation of the semen analysis report and are based on information contained in the World Health Organisation (2010) Laboratory Manual for the Examination and Processing of Human Semen<sup>1</sup> and the British Fertility Society (2013) Semen Quality and its Relationship to Natural and Assisted Conception<sup>2</sup>

<sup>1</sup><http://www.who.int/reproductivehealth/publications/infertility/9789241547789/en/> <sup>2</sup><http://informahealthcare.com/doi/abs/10.3109/14647273.2013.807522>

If you still have questions about the report please contact the Andrology Service on (0114) 226 8343 and a member of our scientific staff will be happy to speak to you.

## Volume

95% of fertile men have a semen volume of >1.5mls. Volume is used to calculate the total number of progressively motile sperm in each ejaculate. Low semen volume is characteristic of obstruction of the ejaculatory duct or congenital bilateral absence of the vas deferens, or may be the result of sample spillage or incomplete ejaculation. High semen volume may reflect active inflammation of the accessory organs.

## pH

There is limited data available for reference values for pH of semen from fertile men. If pH is <7.0 in a sample with low volume and sperm concentration then it may indicate obstruction of the ejaculatory duct or congenital bilateral absence of the vas deferens.

## Viscosity

High viscosity is of unclear clinical significance but may interfere with accurate assessment of sperm concentration and motility.

## Agglutination

The presence of agglutination is associated with, but not conclusively indicative of, the presence of anti-sperm antibodies. High levels of agglutination may interfere with accurate assessment of sperm concentration and motility. The laboratory records agglutination as:

Isolated: <10 sperm per agglutinate; many free sperm  
Moderate: 10-50 sperm per agglutinate; free sperm  
Widespread: 10-50 sperm per agglutinate; few free sperm  
Large: >50 sperm per agglutinate; some free sperm  
Gross: all sperm agglutinated; agglutinates interconnected

## Concentration

This refers to the number of sperm (in millions) per ml of semen and is correlated with time to pregnancy and to fertilisation and pregnancy rates during assisted conception. 95% of fertile men have a concentration of >15 x 10<sup>6</sup> sperm per ml. It is influenced by the volume of secretions from the accessory glands and therefore is not an independent measure of testicular output. Concentrations of fewer than 100,000 sperm per ml are difficult to measure accurately and so are reported as 0.1 million sperm per ml. Sperm concentration should be interpreted alongside sperm motility and semen volume (see below). The level of measurement uncertainty may be high for samples with low sperm concentration.

## Motility

95% of fertile men have progressive sperm motility greater than 32%. Sperm motility is influenced by temperature and time since ejaculation. Sperm motility should be interpreted also taking sperm concentration and semen volume into account (see below).

## Total number of progressively motile sperm

This is the total number of sperm in the ejaculate (concentration x volume) multiplied by the % of progressively motile sperm. It is of biological significance and 95% of fertile men have ejaculates which contain >7.2 million progressively motile sperm.

## Live cells

Semen samples containing a low percentage of progressively motile sperm may also have the proportion of live cells assessed (sometimes called sperm viability or vitality). The presence of a large proportion of live but immotile cells can indicate structural defects of the flagellum. This is important to assess, as a sperm that does not swim may still be alive and can be used in assisted conception. This test is not appropriate for most semen samples and the laboratory staff will decide whether or not to perform this test when they assess each sample. When the test has not been performed the report will indicate this by showing 'n/a' in the data field.

## Normal forms

95% of fertile men have ≥4% of their sperm with ideal size and shape (morphology). The relationship between the % of normal forms and pregnancy rates have been established, but given the high level of uncertainty associated with assessing this parameter the British Fertility Society concludes that isolated teratozoospermia (low sperm morphology when all other parameters are above the reference ranges) is probably clinically insignificant. However, where two or more samples have 0% normal sperm morphology (regardless of other variables), this may be indicative of globozoospermia (round headed sperm), which is a known sterilising defect.

## Uncertainty

Measurement uncertainty exists for all parameters assessed in this semen analysis. Please contact us if you would like more information about the uncertainty of the tests performed.

## Repeat testing

Where one or more semen analysis variables are lower than the reference ranges (except normal forms) please consider re-referring the patient for a repeat test. We recommend that repeat testing is not carried out within 90 days of the first to allow a further cycle of spermatogenesis to be completed.

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