

Strict Sperm Morphology Evaluation

Seminal Evaluation

Most men will initially be diagnosed with a potential male factor problem based on the results of an ejaculated sperm specimen. Normal values for the sperm analysis, as defined by the World Health Organization (WHO):

PARAMETER	MINIMUM VALUE
Volume (mL)	2.0
Sperm Concentration (million/mL)	20
Motility (%)	50
Forward Progression (0-4)	3
Normal Morphology (%) (WHO)	30
Normal Morphology (%) (Strict)	14
Total Sperm Count (million)	40
Total Motile Sperm (million)	20
Total Functional Sperm (million)	6

Total Motile Count (TMC)

Sometimes only one sperm parameter is abnormal and in most cases several sperm parameters are abnormal. An indicator useful in determining overall fertility is called the total motile count. This number represents the total number of motile sperm in the ejaculate.

The total motile count is calculated thus:

$$\text{Ejaculate volume} \times \text{Sperm Concentration} \times \% \text{Motility} = \text{TMC}$$

If the TMC is 20 million sperm or less, there is likely to be a 'significant' male factor problem. Men with a TMC consistently less than 5 million are said to have 'severe' male factor infertility.

Sperm Morphology

Another highly important parameter assessed during the semen analysis is the overall morphology, or shape of the sperm. The shape of the sperm is a reflection of proper sperm development in the testicles, or more specifically during the process called spermatogenesis (sperm formation). Men with a defect in sperm maturation tend to have problems with sperm morphology and may then be at risk for failure of their sperm to fertilize their partner's eggs.



There are two methods for performing sperm morphological evaluations during a semen analysis. Most clinical laboratories perform a crude estimation of the percentage of sperm in the ejaculated specimen that appear to have normal shape.

Only specialized andrology laboratories have trained technicians that can perform a "strict" sperm morphological evaluation during a semen analysis. Only these "strict criteria" (also known as Krueger criteria) have been studied with regard to fertilization success or failure.

If a man has a decreased number of normally shaped sperm on the Krueger strict morphology analysis, he is at risk of fertilization failure or at least low rates of fertilization.

However, an increased number of abnormally shaped sperm with 'non-strict' criteria may indicate a fertilization problem, but to be certain this test should probably be repeated in a laboratory that performs strict criteria semen analysis.

Strict morphology is a useful test to perform with couples that have unexplained infertility, even if the semen analysis and non-strict morphology are otherwise normal.

