

Lower reference limits for semen analysis (WHO 2010)¹

Volume ≥ 1.5 ml

Sperm concentration ≥ 15 million/ml

Total sperm count ≥ 39 million/ejaculate

Motility $\geq 32\%$ (rapid + slow)

Morphology $\geq 4\%$ normal forms

The lower reference limits were generated from semen analyses of over 1850 men with proven fertility, whose partners became pregnant within 12 months of trying to achieve a pregnancy (one-sided reference limits, 5th centile).

Notes:

- Abstinence should be 2-7 days. Longer periods of abstinence can negatively affect motility and morphology
- Samples should be examined for motility within an hour of production
- Semen parameters that lie above the lower reference limits do not guarantee fertility
- Men whose semen samples have variables below the reference limits are not necessarily infertile (5% of fertile men have values below reference limits)
- The probability of pregnancy increases with increasing sperm concentration up to 40×10^6 /ml

¹Cooper TG *et al.* World Health Organisation reference values for human semen characteristics. *Hum Reprod Update* 2010; **16**: 231-245

<http://humupd.oxfordjournals.org/content/16/3/231.full.pdf+html>