



Optimising Sperm Health & Male Fertility

Male fertility problems are generally acknowledged as being as prevalent as those affecting the female, and although studies give varying figures, the cause of a couple's infertility are approximately assessed as:

30% female fertility problems 30% male fertility problems
20% mutual problems 20% unexplained problems

Most cases of male infertility are the result of abnormal sperm count or quality. Miscarriage is also linked to poor sperm health that results in an unviable conception. Although it takes only one sperm to fertilise an egg, an average healthy ejaculate contains nearly 200 million sperm. The natural barriers in the female reproductive prevent all but about 40 sperm from reaching the vicinity of an egg. The number of sperm in an ejaculate and the degree of fertility are strongly related.

Sperm count as well as sperm quality has been deteriorating over the last few decades. In 1940, the average sperm count was 113 million per millilitres; by 1990, that value has dropped to 66 million. Adding to this problem, the amount of semen fell almost 20%, from 3.4 millilitres to 2.75 millilitres. Altogether these changes mean that, per ejaculate, men are now supplying only about 40% of the number of sperm men supplied in 1940's. This downward trend in sperm count has led to speculation that recent environmental, dietary or lifestyle changes are interfering with a man's ability to manufacture sperm. Although this speculation is controversial, substantial evidence supports it.

Diagnosis of Male Infertility

Male fertility is less complex and therefore much more easily assessed than females. It may be helpful, if you are planning to conceive a child soon, to have a semen analysis performed. Depending on the laboratory where this is analysed, this will (ideally) tell you whether you have sufficient numbers of sperm per millilitre of semen (count), whether they move well (motility) and in the right direction (progressive motility), and whether or not they are deformed (morphology). It will also tell you if the volume and viscosity of the semen is adequate, and if the pH levels are appropriate (not too acidic).

It will not tell you however, whether your sperm contain too many toxins or insufficient nutrients to form a healthy embryo. Although medically speaking a sample may actually be considered viable, there may be indications that the conception resulting from these sperm will be less than optimally healthy. This is why it's so important to ensure your preconception period addresses your reproductive health to help ensure maturation of healthy sperm. Toxicity and nutrient status are not measured in a semen analysis, but poor motility or lots of abnormally shaped sperm will give an indication that these factors are of concern, and need particular attention.

Researchers are now aware that QUALITY is more important than QUANTITY.

**A high sperm count means absolutely nothing,
if the percentage of healthy sperm is not also high.**

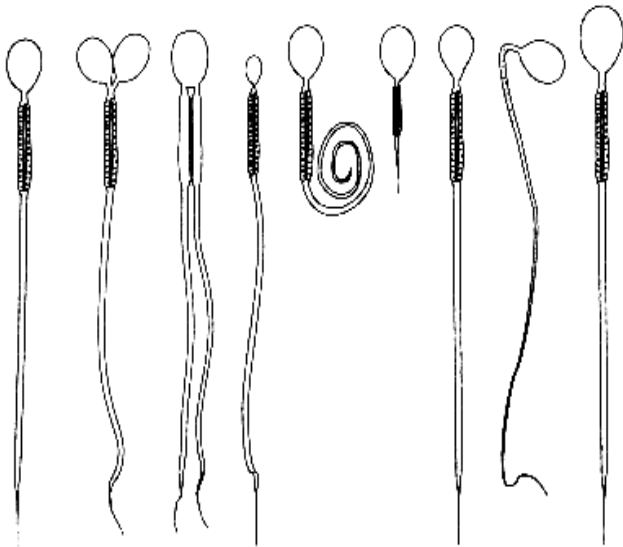
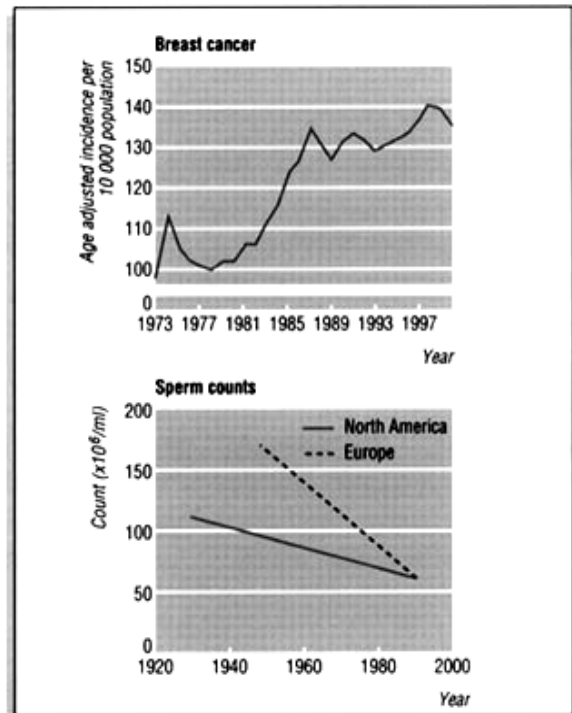


Fig 1. Abnormal infertile sperm compared with a normal sperm, on the right.

Figure 2. Trends in Reproductive Health, United States

How strong is the evidence of a link between environmental chemicals and adverse effects on human reproductive health? Sharpe RM, Irvine DS. *BMJ* 2004; 328(7437):447-57.



The possible causes of male fertility problems:

- **Hormonal imbalance;** e.g. excessive prolactin or raised LH and FSH, which can cause damage the testes, other malfunctions of the pituitary or hypothalamus glands or inadequate testosterone
- **Damage to the testes;** from drugs, surgery, or radiation or from TB, mumps or gonorrhoea
- **Effect of certain drugs;** antibiotics, steroids, beta-blockers, calcium channel blockers and ACE inhibitors
- **Blocked tubes;** obstruction in vas deferens or epididymis; congenital defects, postinfectious obstruction, cystic fibrosis
- **Increased scrotal temperature;** tight-fitting clothing and briefs, increase in varicoceles*. Certain exercises also raise the temperature.
- **Increased pollution of the environment;** heavy metals (lead, cadmium, mercury, arsenic etc - Hair Tissue Mineral Analysis is useful here), organic solvents, pesticides (DDT, PCB's, etc), increased exposure to synthetic oestrogens
- **Sperm antibodies;** these cause the tails of the sperm to stick to the cervical mucous, and are dysfunctional
- **Infection/Inflammation;** of prostate or seminal vesicles (accessory glands)
- **Stress;** especially through its effects on the adrenal glands

- **Abnormal penile erection or ejaculation;** usually a stress or emotional reaction (premature or retrograde ejaculation)
- **Nutrient deficiencies;** lack of essential minerals, vitamins, fatty acids and antioxidants
- **Varicoceles in the testes;** surgery is possible though not often effective * Varicose swellings that, when viewed through the skin of the scrotum, look blue.
- **Undescended testes;** surgery is possible

Remember it takes approximately 3 months for sperm to mature from a sex cell in a fully functioning sperm – so you need a minimum of 4 months preconception care. The sperm now being ejaculated began their formation in the health conditions, which prevailed 3 months previously. This also means there is no point repeating your semen analysis at intervals of less than this and expecting to see much change. Visiting a doctor to rule out any of the above conditions contributing to infertility is essential, as is arranging a semen analysis.

Naturopathic & Nutritional Treatment for Improving Male Fertility

Consider this preconception work as an *investment*; in the quality of your conception attempts, a successful and healthy pregnancy and ultimately the health of your child.

1. Nutrition:

Making positive choices and changes within the diet are essential (See 'Guide to Healthy Eating'). Key points – increase fresh, whole and unprocessed foods, increase fruits, vegetables and wholegrains, decrease saturated and trans fats (red meats, dairy products), increase 'good' essential fatty acids (fish, nuts, seeds, vegetable oils). See handout for specifics.

2. Essential Supplementation: Additional to a quality diet.

Antioxidants – mop up free-radical damage and protect cellular health, *Zinc, Selenium, Vitamins A, C, and E, Co-Enzyme Q-10*. Specifics will be prescribed.

Detoxifying agents – working through the liver and mopping up harmful toxins from diet and lifestyle – *St. Mary's Thistle, Reishi Mushrooms, Grape seed extract, Garlic*, nutrients such as *choline, taurine and lipoic acid*.

Sperm nutrients – required for sperm development and maturation amino acids (*arginine, carnitine, histidine*), *calcium, magnesium, B-complex, Essential fatty acids (Omega 3, 6 & 9)*.

3. Herbal Medicines:

These cover areas of *detoxification, hormonal balance, sperm count, motility, pH or viscosity, the immune system, the lymphatic system, stress levels, circulation* (which in turn, helps 'deliver' the nutrients and 'move' the waste at a cellular level), *the liver* (for enhanced detoxification function) and the *adrenal glands* (stress & hormonal balance). Herbs used may include any of the following:

Ginkgo, Sarsaparilla, Panax Ginseng, Tribulus, Damiana, Siberian Ginseng, Saw Palmetto, Astragalus, Liquorice, Gotu Kola, Oats seed, St. Mary's Thistle, Withania, Schisandra.

4. Detoxification:

A good diet generally helps this, as does exercise, avoidance of drugs, taking care with environmental, domestic and industrial pollution. A *Hair Trace Mineral Analysis* is an essential screening for heavy metal contamination in the body. Research shows cigarette smoking is closely associated with low sperm counts, poor sperm motility, and a high frequency of abnormal sperm. Alcohol is also a toxin to the body; limit or better still avoid in this preconception time.

5. Temperature control:

The testicles need to be a degree or two cooler than the rest of the body in order to manufacture sperm efficiently. If raised outside of this, sperm production is greatly inhibited or stopped completely. It has been shown that typically, the mean scrotal temperature of infertile men is significantly higher than that of fertile men

6. Stress control:

Adopt a new coping strategy or adapt your lifestyle to reduce your stress levels. No body likes to feel 'stressed', but the nervous system response has many detrimental and domino-like affects in the body (e.g. nutritional, immune based, hormonal, blood pressure and blood sugar). Never underestimate the effects of stress: physical, mental/emotional, or spiritual. A lot of people ignore their stress or 'live with it' – not good!

7. Water intake:

Adequate hydration helps keep semen viscosity (thickness) down, as well as an essential daily requirement for your body! (>2.0L/day) If viscosity is high, certain herbal medicines can also be useful.

8. Alkalisating foods:

If the pH of semen is too low (acidic) it can cause the sperm to be immobilised. This is usually the result of general systemic acidity, and should respond to a more alkali-forming diet. The diet should include a high vegetable intake (esp. fresh juices), fruits (except plums, cranberries and prunes) and nuts (almonds & hazelnuts), whilst also reducing acidic-forming foods (coffee & tea, sugar, red meats, eggs & dairy produce). Herbal medicines that help are *Alfalfa and Red Clover*, and the tissue salt *sodium phosphate*.

9. Infection control:

The white cells generated in the presence of infections in the genito-urinary tract can damage sperm and testes through the effect of free radicals. This is where antioxidant therapy goes to work! Have your doctor check for any low-grade, chronic infections that you may not even know about.

The Medical Treatment of Male Fertility

This can be done with hormonal drugs, if testosterone is low or surgery for varicocele. Otherwise IVF procedures, where sperm is treated and microinjected, are used to bypass the problem. Varicocele surgery, when it is successful can improve all aspects of sperm health. It also, in some cases, seems to reduce heat in the scrotum, which may be part of the problem. In men with varicoceles there is often nutrient loss and oxidative damage to the sperm, so anti-oxidants are particularly helpful.