Male Infertility
By Rona Wang and Jenny Allison

Introduction:

The role of the human male in reproduction looks straightforward at first glance. After all, it takes only one sperm to fertilise an egg. Yet the numbers and health of the sperm required to make fertilisation likely are influenced by many factors.

At present about 30-40% of infertility is caused by male factors alone and this is rising. Sperm quantity has almost halved in the last two generations, and whereas 50 million/ml was considered a normal value after WW II it is now accepted as 20 million/ml. The parameters for normal morphology have also dropped from 50% to 14% (WHO). Thus the reproductive experts are constantly shifting the ‘goal posts’ of normalcy to accommodate the decline.

There are many external environmental causes of male infertility and they are largely related to hormone disrupting substances (estrogenic and anti-androgenic) in the food chain. These are pesticides and herbicides, the soya products used in processed food, cling film, the contraceptive pill in drinking water (a problem in European cities which recycle their water), industrial pollutants, household cleaning products, cosmetics and drugs. Excess estrogens account for the rise in testicular cancer, undescended testes and the major decline in sperm counts which has occurred since the 1950’s1. There is even evidence that damaging toxic substances may affect the sperm of future generations2.

Electromagnetic pollution also appears to play a part, as shown in a recent large study on cell phone use which noted a significant decline in sperm count, motility and morphology in those who used their mobile phones more than four hours a day3.

The relentless stress associated with modern urban lifestyles results in hormonal imbalance and a reduced sperm production.

While Western medicine has little to offer in resolving the problem, apart from IUI, IVF, ICSI and surgery for physical obstructions/varicocele, Chinese medicine is useful in improving all sperm parameters, as well as facilitating the metabolism of toxins and improving the general immune status.

Normal sperm parameters

The normal concentration of semen is greater than or equivalent to 20 million per milliliter. Given a normal volume of ejaculate of 2ml, it means that at least 40 million sperm must be present to fertilise an egg and that fertilisation is unlikely at any concentration below this.

3 Agarwal.A Relationship between cell phone use and human fertility:an observational study. Highlights from the 62nd annual meeting American Society for Reproductive Medicine.
However the other important factors in fertility are the strength and energy of the sperm (motility) and their shape (morphology). These influence their ability to swim as well as the viability of an embryo that might be created. Each ejaculation deposits the sperm only a certain distance into the vagina near the cervix. Guided by chemical signals and aided (immensely) by the upward peristaltic waves of the female orgasm, the sperm must then travel up to the fallopian tube where the released egg awaits fertilisation. The sperm must swim strongly and straight, not only to reach the egg but to penetrate its surface in the process of fertilisation. Abnormally shaped sperm are unlikely to manage the journey, and if they do they are unlikely to produce a viable embryo.

Spermatogenesis takes approximately 62-72 days. During this time the sperm count, morphology, and motility can be greatly affected by hormonal imbalance, raised temperature, local trauma, inflammation and infection, and toxic substances in the environment. Even having a viral infection such as the flu can affect sperm for up to two months afterwards. There also may be inherited poor sperm production and hereditary conditions which affect sperm production.

Aside from disorders in production, the genitourinary pathways may be obstructed by adhesions and scarring, and physical abnormalities in the vas deferens, prostate, penis (hypospadias) and seminal vesicles.

In summary, there are three requirements for normal sperm. They are that:

1. The testicles should produce enough normal-shaped sperm.
2. There should be normal unobstructed pathways which can conduct the sperm successfully through the epididymis, vas deferens, ejaculatory duct and urethra.
3. There should be normal sexual function which enables the sperm to meet with the egg through ejaculation.

### Table of normal semen parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>2.0ml-6.0ml</td>
</tr>
<tr>
<td>pH</td>
<td>7.2-7.8</td>
</tr>
<tr>
<td>Concentration</td>
<td>&gt;20x10^6/ml</td>
</tr>
<tr>
<td>Motility</td>
<td>&gt;50%</td>
</tr>
<tr>
<td>Morphology</td>
<td>&gt;30% with normal morphology, or &gt;14% (WHO)</td>
</tr>
<tr>
<td>WBC</td>
<td>&lt;1x10^5/ml</td>
</tr>
</tbody>
</table>
Normal semen

<table>
<thead>
<tr>
<th>Source</th>
<th>Volume</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urethral and bulbourethral glands</td>
<td>0.1-0.2 cc</td>
<td>Viscous, clear</td>
</tr>
<tr>
<td>Testes, epididymis, vas deferens</td>
<td>0.1-0.2 cc</td>
<td>Sperm present</td>
</tr>
<tr>
<td>Prostate</td>
<td>0.5-1.0 cc</td>
<td>Acidic, watery</td>
</tr>
<tr>
<td>Seminal vesicles</td>
<td>1.0-3.0 cc</td>
<td>Gelatinous, fructose positive</td>
</tr>
<tr>
<td>Complete ejaculate</td>
<td>2.0-6.0 cc</td>
<td>Liquefies in 20-25 mins</td>
</tr>
</tbody>
</table>

Symptoms of abnormal semen
Abnormality of the semen is divided into abnormality of the seminal fluid and abnormality of the sperm, or spermatozoa.

A. **Excess or deficient volume of seminal fluid.** The normal quantity of semen at each ejaculate is 2-6 ml: less than 1.5 ml or more than 6ml is considered abnormal and may be associated with local inflammation. An increased quantity of seminal fluid does not necessary mean an increased number of spermatozoa.

B. **Haemospermia (blood stained semen).** In severe conditions, blood is visible in the semen with the naked eye: this is termed “gross haemospermia. In mild conditions where blood is only visible under the microscope, it is termed “microscopic haemospermia”. Both conditions indicate infection or trauma.

C. **Poor liquefaction of semen.** Under normal conditions semen should liquefy slowly in 10-30 minutes at room temperature. This timing coincides with other changes taking place in the vagina to facilitate sperm penetration. Failure to liquefy inhibits normal movement and prevents the lowering of the vaginal pH which occurs through the mingling of vaginal mucous and semen to a level best suited to sperm survival.

D. **Oligospermia and aspermia.** Semen normally contains 20-250 million spermatozoa. If three consecutive tests show a result below 20 million then there is a diagnosis of oligospermia. Oligospermia is commonly associated with environmental and hereditary factors, retrograde ejaculation which occurs in diabetics and paraplegics, and varicocele which causes raised temperature and increased CO2 in the blood in the testes. Even hot baths can cause malfunction of the sperm producing cells in the testes. A complete absence of sperm is aspermia which may be caused by atrophy and degeneration of certain sperm producing cells or damage and physical obstruction. The pituitary hormone FSH is needed in the sperm maturation process, and so raised serum FSH levels reflect a lack of sperm production in the testes. Aspermia may also manifest when there is an arrest in the late stage development of sperm but in this case the FSH remains normal. This situation may be due to drugs and radiotherapy.

E. **Abnormal morphology and necrospermia:** Malformation of sperm is often associated with disorders of semen liquefaction. It is caused by the effect on
testicular function of toxins, heat, electromagnetic radiation, inflammation, infections and auto-immune disorders. The head, body and tail may all be deformed. At least 30% of sperm should be mature and have a normal oval head, a normal body and tail. Necrospermia refers to the death of at least 40% of spermatozoa on semen analysis. This must be distinguished from artificially induced sperm death by faulty testing or delay in testing

F. **Sperm agglutination.** The presence of anti-sperm antibodies (ASA'bs) causes ‘clumping’ of the sperm cells which prevents them from moving correctly in the semen. ASA'b's often occur in both partners when the blood/semen barrier is broken either in the male reproductive tract or in the vagina and is common after vasectomy reversal.

G. **Poor sperm motility.** Sperm motility is rated by the number of motile sperm and their ability to swim fast and straight. It is graded from no movement at a (0), through movement in situ or in circles (1) and medium motility (2&3) to excellent forward progression. At least 50% of sperm should have good forward progression.

**Western Medicine treatment for abnormal sperm:**

1. **Antibiotic treatment** is mainly used in semen abnormalities caused by chronic bacterial prostatitis or seminal vasculitis. Anti-bacterial drugs that can penetrate the prostate are selected. In clinical practice, of trimethoprim (TMP and rifampicin (RFP) are combined to good effect. Non-steroid anti-inflammatory drug (NSAID) treatments are mainly used in chronic non-bacterial accessory gonad inflammation. Commonly used drugs include aspirin, indomethacin, phenylbutazone, ibuprofen etc. The side-effects of antibiotics are to weaken the Spleen and exacerbate any dampness. This must be taken into account when formulating a TCM treatment plan.

2. **Hormone therapy:** HCG and clomiphene are used when there is both too much and too little seminal fluid and to regulate endocrine functions and sperm production. From a TCM perspective, overstimulation of the testicle/pituitary weakens the Jing (kidney essence) and again this should be taken into account with TCM treatment.

3. **Surgery** is used to resolve varicocele and obstructions of the sperm ducts. After surgery blood moving herbs are used to help resolve any residual blood stagnation resulting from the surgery itself, and to promote healing.

**Chinese medicine:**

**Etiology & pathology of abnormal semen in Chinese medicine**

Traditional Chinese medicine maintains that the Kidney is largely responsible for
male infertility. The Kidney stores essence and is in charge of reproduction. Kidney yin and yang disharmony and Kidney deficiency are therefore the major pathologies. In Huang Di Nei Jing says, “At the age of sixteen, as the Kidney qi is abundant and Tian Gui occurs, a boy begins to experience sperm emission. If he has copulated with a woman at this period, he can have a baby.”

Thus the maturation of Jing/essence and the harmony of yin and yang are associated with reproduction. The TCM view is borne out by studies in vivo which show that the Kidney tonics such as Yin Yang Huo (Herba Artemisiae Scopariae) have the ability to improve semen secretion, and that the drug, clomiphene, can stimulate the pituitary to secret follicle stimulating hormone (FSH), which, in turn, improves the spermatogenetic activities of the testicles.

Treatment for abnormal sperm with Chinese medicine:

1. **Kidney deficiency:** In TCM, low levels of seminal fluid, oligospermia and necrospermia are mainly due to Kidney deficiency.

   **Main symptoms** are those of Kidney yang deficiency, with sensations of cold, especially on lower back, impotence, low levels of seminal fluid and oligospermia, poor morphology, low libido, fatigue and tendency to get infections, poor appetite, diarrhoea and clear profuse urination, tongue swollen and pale with teeth marks, and a thin greasy or wet coating, pulse weak, especially on the Kidney positions.

   **Principle of treatment:** Invigorate and nourish the Kidney.

   **Formula and Herbs:** You Gui Yin with modifications:

   - Yin Yang Huo (Herba Epimedii), Shu Di (Radix Rehmanniae), Shan Yao (Rhizoma Dioscoreae), Gou Qi Zi (Fructus Lycii), Tu Si Zi (Semen Cuscutae), Lu Jiao Jiao (paste of Cornu Cervi), Shan Zhu Yu (Fructus Corni), Dan Shen (Radix Salviae Miltiorrhizae), Huang Jing (Rhizoma Polygonati), Rou Cong Rong (Herba cistanchis), Huang Qi (Radix Astragali), Bu Gu Zhi (Fructus Pseudalfae) Dang Gui (Radix Angelicae sinensis), Chuan Xiong (Rhizoma Ligustici Chuanxiong), Liu Ji Nu (Herba Artemisiae Anomala).

2. **Damp and heat:**

   **Main symptoms:** Heavy body, tendency to fatigue, poor concentration, fuggy head, thirst and hunger but easily full, sticky and smelly stools, yellow, cloudy urination, low libido/fatigue after sex, premature ejaculation. There are characteristically symptoms of inflammation/infection, such as yellow, sticky semen, necrospermia or spermagglutination, non-liquefaction of semen, and hemospermia. The tongue is red with a thick, **greasy yellow** coating and the pulse is slippery and rapid.

   **Principle of treatment:** Clear damp-heat, invigorate the qi and blood.

   **Formula and herbs:** Hong Teng Bai Jiang Tang with modifications:

   - Hongteng (Sargentodoxae Caulis), Bai Jiang Cao (Patriniae Herba cum Radice), Ze Lan (Herba gleditsiae), Ku Shen(Radix Sophorae Flavescentis), Wang Bu Liu Xing
(Semen Vaccariae), Ye Ju Hua (Flos Chrysanthemi), Chuan Niu Xi (Radix Cyathulæa), Zao Jiao Ci (Spina Gleditsiaæ), Yi Yi Ren (Semen Coicis), Dan Shen (Radix Salviae Militiorrhizæa), Yu Xing Cao (Herba Houttuyniaæ), Chi Shao (Radix Paeoniae Rubra), Hou Po (Cortex Magnoliaæ Officinalis), Mu Xiang (Radix Aucklandiae), Huang Bai (Cortex Phellodendriæ), Che Qian Zi (Herba Plantaginis), E Zhu (Rhizoma Zedoariae), etc.

3. Mixed type—kidney deficiency with damp & heat: (anti-sperm antibodies-ASAb’s)

**Main symptoms:** The symptoms combine those of the above category with Kidney yin deficient symptoms such as lower back pain, exhaustion, dizziness, tinnitus, five hearts hot, etc.

**Principle treatment:** Tonify kidney and clear damp-heat.

**Formula and herbs:** *Si Miao Wan* or *Hong Teng Bai Jiang Tang* with the addition to non-greasy Kidney tonics and blood moving herbs.

Shan Zhu Yu (Fructus Corni), Sang Ji Sheng (Ramulis Loranthi), Tu Si Zi (Semen Cuscutatu), Xu Duan (Radix Dipsaci), Huang Jing (Rhizoma Polygonati), Chen Pi (Pericarpium Citri Reticulatae), Dan Shen (Radix Salviae Militiorrhizæa) Huang Qi (Radix Astragali seu heysari), Bai Zhu (Rhizoma Atractylodis Macrocephalæ), Fu Ling (Poria), Shanyao (Rhizoma Dioscoreae), Hong Teng (Sargentodoxæ Caulis), Bai Jiang Cao (Patriniae Herba cum Radice), Chuan Niu Xi (Radix Cyathulæa), Hou Po (Cortex Phellodendriæ).

4. **qi & blood stagnation:**

**Main symptoms:** Fatigue which is alleviated after movement, chronic emotional problems, hemospermia, sperm malformation, necrospermia, varicocele, etc, normal stools and urination. The tongue may be dark/ dark purple with dark patches or and the pulse choppy, thin or wiry.

**Principle treatment:** Invigorate the qi and remove blood stasis.

**Formula and herbs:** *Tao Hong Si Wu Tang*, *Xue Fu Zhu Yu Tang* or *Chai Hu Shu Gan San* + Kidney tonics herbs.

Chi Shao (Radix Paeoniae Rubra), Hong Hua(Flos Carthami) Wu Ling Zhi (Faeces Togopterorum), Pu Huang (Pollen Typhae), Chai Hu (Radix Bupleuri), Chuan Lian Zi (Fructus Meliae Toosendan), Bai Shao (Radix Paeoniae Alba), Di Long (Limbricus), Chuan Shan Jia (Squama Manitis), Liu Ji Nu (Herba Artemisiaæ Anomalaæ), Lu Jiao Pian (paste Cornu cervi), Xian Ling Pi (Herba Artemisiaæ Scopariaæ), Ba Ji Tian (Radix Morinda) , Dan Shen (Radix Salviae Militiorrhizæa), Shu Di Huang(Radix Rehmanniaæ),Tao Ren (Semen Persicaæ), Shan Zhu Yu (Fructus Corni), etc.

**Treatment for specific conditions**
Non-liquefaction of semen:

Non-liquefaction of semen is caused by either deficiency of Kidney essence and hyperactivity of ministerial fire in which heat consumes the body fluid, or dampness and heat obstructing the semen production sites and pathways. Qi is obstructed, dampness coagulates to form phlegm and the combination of fire and phlegm accumulates in the semen production chamber, resulting over time in thick mucousy semen.

1. Kidney yang deficiency with obstruction of dampness and phlegm: You Gui Yin with modifications. Yin Yang Huo (Epimedii Herba), Shan Yao (Dioscoreae Rhizoma), Gou Qi Zi (Lycii Fructus), Tu Si Zi (Cuscutae Semen), Shan Zhu Yu (Fructus Corni), Sang Ji Sheng (Taxilli Herba), Xu Duan (Dipsaci Radix), Huang Jing (Polygonati Rhizoma), Chen Pi (Citri reticulatae Pericarpium), Dang Gui (Angelicae sinensis Radix), Dan Shen (Salviae miltiorrhizae Radix), Huang Qi (Astragalus Radix), Bai Zhu (Atractylodis Rhizoma), Fu Ling (Poria).

2. Kidney yin deficiency-heat: Liu Wei Di Huang Wan or Zhi Bai Di Huang Wan, with blood moving herbs. Herbs: Sheng Di Huang (Radix Rehmanniae), Shan Zhu Yu (Fructus Corni), Shan Yao (Rhizoma dioscoreae), Mu Dan Pi (Cortex Moutan Radicis) Dang Gui (Radix Angelicae Sinensis), Huang Bai (Cortex Phellodendri), Zhi Mu (Rhizoma Anemarrhenae) He Shou Wu (Radix Polygoni Multiflori), plus Dan Shen (Radix Salviae Miltiorrhizae), Chi Shao (Paeoniae Radix Rubrae), etc.

3. Damp-heat stagnation: Si Miao San with blood moving herbs. Che Qian Zi (Plantaginis Semen), Huang Bai (Phellodendri Cortex), Bai Zhu (Atractylodis Rhizoma), Cang Zhu (Atractylodis Rhizoma), Chen Pi (Citri reticulatae Pericarpium), Fu Ling (Poria), Hong Teng (Sargentodoxe Caulis), Bai Jiang Cao (Patriniae Herba cum Radice), Chuan Niu Xi (Cythulae Radix), Liu Ji Nu (Arctemisiae anomala Herba), Shan Zha (Craetagus), Dang Gui (Angelicae sinensis Radix), Hong Hua (Carthami Flos), Ji Xue Teng (Spatholobi Caulis), Chuan Xiong (Chuanxiong Rhizoma), San Leng (Sparganii Rhizoma), E Zhu (Curcumae Rhizoma), Gan Cao (Glycyrhizae Radix)

4. Qi & blood stagnation: Xue Fu Zhu Yu Tang Tao Ren (Semen Persicae), Hong Hua (Flos Carthanmi), Dang Gui (Radix Angelicae Sinensis), Sheng Di Huang (Rdix rehma niae), Chuan Xiong (Rhizoma Ligustici Chuanxiong), Chi Shao (Radix Paeoniae Rubra), Chuan Niu Xi (Radix Achyranthis Bidentatae, Chai Hu (Radix Bupleuri), Zhi Ke (Fructus Aurantii), Gan Cao (Radix
**Necrospermia:**

This refers to the presence of at least 40% dead sperm on semen analysis. The dead sperm are normal in quantity and have normal morphology. In WM it is related to a lack of minerals, in particular zinc, and low oxygen levels due to testicular inflammation and a pH lower than 7.2. In TCM it relates to Kidney and/or Spleen deficiency, blood stagnation and damp-heat stagnation.

1. **Kidney deficiency:** *Wu Zi Yan Zong Wan*, with ziheche, shechuanzi, buguzhi  
   Herbs: *Wu Wei Zi (Schisandrae Fructus)*, *Tu Si Zi (Cuscutae Semen)*, *Nu Zhen Zi (Ligustri lucidi Fructus)*, *Che Qian Zi (Plantaginis Semen)*, *Fu Pen Zi (Fructus Rubi)*, *Gou Qi Zi (Lycii Fructus)*, *Zi He Che (Hominis Placenta)*, *Bu Gu Zhi (Psoraleae Fructus)*, *Rou Cong Rong (Herba Cistanches)*.

2. **Qi & blood stagnation:** *Xue Fu Zhu Yu Tang*. Tao Ren (Persicae Semen), Hong Hua (Carthami Flos), Dang Gui (Angelicae sinensis Radix), Sheng Di Huang (Rehmanniae Radix), Chuan Xiong (Chuanxiong Rhizoma), Chi Shao (Radix Paeonieae Rubra), Chuan Niu Xi (Cyathulae Radix), Chai Hu (Bupleuri Radix), Zhi Ke (Aurantii Fructus), Gan Cao (Radix Glycyr rhizae).

3. **Damp-heat accumulation:** *Hong Teng Bai jiang San* or *Si Miao San+ blood moving herbs.*  
   Hong Teng (Sargentodoxae Caulis), Bai Jiang Cao (Patriniae Herba cum Radice), Yi Yi Ren (Coicis semen), Mu Dan Pi (Moutan Cortex), Pu Gong Ying (Taraxaci Herba), Che Qian Zi (Plantaginis semen), Huang Bai (Pellodendri Cortex), Bai Zhu (Atractylodis Rhizoma), Cang Zhu (Atractylodis Rhizoma) Chi Shao (Peoniae Radix Rubrae), Hong Hua (Carthami Flos), Ji Xue Teng (Spatholobi Caulis).

4. **Spleen qi deficiency:** *Si Jun Zi Tang* with modifications.  
   Ren Shen (Ginseng Radix), Bai Zhu (Atractylodis Rhizoma), Fu Ling (Poria), Huang Qi (Astragali Radix), Shen Qu (Massa medicata fermentata), Shan Yao (Dioscoreae Rhizoma), Shan Zha (Craetagus), Chen Pi (Citri reticulatae Pericarpium), Gan Cao (Glycyr rhizae Radix) *Hong Hua (Carthami Flos)*, *Ji Xue Teng (Spatholobi Caulis)*, *Dan Shen (Radix Salviae Miltiorrhizae)*, *Tao Ren (Semen Persicae)*.

**Poor motility:**

Poor motility is diagnosed if more than 50% of sperm fail to show good forward.
progression. This indicates a lack of energy and mainly relates to Kidney yang deficiency, qi deficiency or qi and blood stagnation.

Gou Qi Zi (Lycii Fructus), Shan Yao (Dioscoreae Rhizoma), Shan Zhu Yu (Corni Fructus), Shu Di Huang (Rehmanniae Radix preparata), Du Zhong (Eucommiae Cortex), Rou Gui (Cinnamomi Cortex), Xian Mao (Curculiginis Rhizoma), Yin Yang Huo (Epimedi Herba), Ba Ji Tian (Morindae officinalis Radix), Dang Gui (Angelicae sinensis Radix), **Dan Shen (Radix Salviae Miltiorrhizae)** Gan Cao (Glycyrrhizae Radix).

Dang Shen (Radix Codonopsis), Bai Zhu (Rhizoma Atractylodis Macrocephalae), Fu Ling (Poria), Gan Cao (Radix glycyrrhizae), Xiang Fu (Rhizoma Cyperi) Sha Ren (Amomum longiligulare), Huang Qi (Radix astragali), Bu Gu Zhi (Fructus Psoraleae), Lu Han Cao, **She Chuan Zi (Cnidii Fructus), Dang Gui (Angelicae sinensis Radix)**.

3. Qi and blood stagnation: *Tao Hong Si Wu Tang or Xue Fu Zhu Yu Tang*
Chi Shao (Paeoniae Radix Rubrae), Hong Hua (Carthami Flos), wu ling zhi (Trogopterorum Faeces), Pu Huang (Pollen Typhae), Chai Hu (Bupleuri Radix), **Chuan Lian Zi (Toosendan Fructus)**, Bai Shao (Paeoniae Radix alba), Di Long (Pheretima), chuan Shan Jia (Squama Manitis Pentadactylae), Liu Ji Nu (Artemisiae anomala Herba), lu jiao pian (cornu cervi), Yin Yang Huo (Epimedi Herba), Ba Ji Tian (Morindae officinalis Radix), Shu Di Huang (Rehmanniae Radix preparata), Dan Shen (Salviae miltiorrhizae Radix), Tao Ren (Persicae Semen), Shan Zhu Yu (corni Fructus), etc.

**Poor morphology**

This condition is often seen with disorders of sperm liquefaction. In Western medicine it is the result of inflammation, infection, toxins, heat, electromagnetic radiation, bacterial and fungal infection and auto-immune disorders. The root is Kidney deficiency and the branch, damp-heat and blood stagnation. Blood invigorating herbs are always added in clinic even though there are usually no clear signs of blood stasis.

*You Gui Yin* with herbs such as Dong Chong Xia Cao (Cordyceps Sinensis), Yin Yang Huo (Epimedi Herba), Suo Yang (Herba Cynomorii Songarici), Rou Gui (Cinnamomi Cortex), Lu Jiao Pian/shuang (Cervi Cornu), Xian Mao (Curculiginis Rhizoma) **Zi He Che (Hominis Placenta)**, Huang Qi
(Astragali Radix), Dang Gui (Angelicae sinensis Radix), Dan Shen (Salviae miltiorrhizae Radix), Chuan Xiong (Chuanxiong Rhizoma), San Leng (Sparganii Rhizoma), E Zhu (Curcumae Rhizoma).

2. Kidney Yin deficiency.
Zuo Gui Yin with herbs such as Sheng Di Huang (Rehmanniae Radix), Shu Di Huang (Rehmanniae Radix preparata), Nu Zhen Zi (Ligustri lucidi Fructus), Shan Zhu Yu (Corni Fructus), Bai Shao (Paeoniae Radix alba), Gou Qi Zi (Lycii Fructus), Mu Dan Pi (Moutan Cortex), Tao Ren (Persicae Semen), Hong Hua (Carthami Flos) and Chi Shao (paeonias Radix Rubra).

3. Qi and blood deficiency.
Ba Zhen Tang with Huang Qi (Astragali Radix), Dang Shen (Codonopsis Radix), Dang Gui (Angelicae sinensis Radix), Bai Shao (Paeoniae Radix alba), He Shou Wu (Polygoni multiflori Radix), Gou Qi Zi (Lycii Fructus), Tu Si Zi (Cuscutae Semen), San Qi (Notoginseng Radix), Ji Xue Teng (Spatholobi Caulis), Chuan Xiong (Chuanxiong Rhizoma), Chong Wei Zi (Leonuri Fructus), Liu Ji Nu (Artemisiae anomalae Herba), Chi Shao (Paeoniae Radix Rubra).

4. Damp stagnation.
Shen Ling Bai Zhu San with Huang Qi (Astragali Radix), Cang Zhu (Atractylodis Rhizoma), Bai Zhu (Atractylodis Radix), Fu Ling (Poria), Che Qian Zi (Plantaginis Semen), Qian Shi (Euryales Semen), Bai Guo (Gingko Semen), Mu Xiang (Aucklandiae Radix), Chen Pi (Citri reticulatae Pericarpium), Sha Ren (Amomi Fructus), Shan Zha (Crataegus), Hu Zhang (Radix et Rhizoma Polygoni Cuspidati), Chi Xiao Dou, Dan Shen (Salviae miltiorrhizae Radix), Hong Hua (Carthami Flos), Hou Po (Magnoliae officinalis Cortex), San Qi (Notoginseng Radix).

5. Damp and heat toxins.
Hong Teng Bai Jiang San with Huang Bai, Bai Hua She She Cao, Pu Gong Ying (Taraxaci Herba) Che Qian Zi (Plantaginis Semen), Hong Teng (Sargentodoxae Caulis), Bai Jiang Cao, Bai Mao Gen (Imperatae Rhizoma), Da Huang (Rhei Radix et Rhizoma), Zhi Zi (Gardeniae Fructus), chuan Bi Xie (Dioscoreae hypoglaucae Rhizoma), Zi Cao (Radix Lithospermi seu Arnebiae), Chi Xiao Dou.

Tao Hong Si Wu Tang with Chi Shao (Paeoniae Radix Rubrae), Da Huang (Rhei Radix et Rhizoma), San Leng (Sparganii Rhizoma), E Zhu (Curcumae Rhizoma).
Note: The appropriate formulae with additions should be used for at least three months.

**Individual herbs with a known beneficial effect on sperm:**
Lujiaojiao (paste of Cornu Cervi) - kidney yang deficiency with low sperm count.
Shuizhi (Hirudo) stimulates sperm movement by helping blood circulation and stimulating the release of sperm.
Huangqi (Radix Astragali seu Hedysari) - immune system disorders with qi deficiency.
Shan Zhu Yu (Fructus Corni) - benefits sperm generally and appears in most formulae to enhance sperm
Shu Di (Radix Rehmanniae) - kidney yin deficiency. Helps generate sperm.
Tu Si Zi (Semen Cuscutae) - kidney yin, jing and yang. Helps generate sperm.
Yin Yang Huo (Herba Epimedii) - improves semen secretion.
Hong Teng (Sargentodoxae Caulis) – invigorates the blood and clears toxins, especially when there are sperm antibodies due to inflammation.
Bai Jiang Cao (Patriniae Herba cum Radice) - clears damp-heat, especially when there are sperm antibodies due to inflammation.

Research indicates that herbal treatments aimed at tonifying yin deficiency, resolving dampness or phlegm and heat, and removing coagulation and obstruction have the same effects as **anti-inflammatory** treatments with Western drugs such as **ofloxacin**. Damp clearing herbs are widely used in the same way that protein decomposing enzymes like **serrapeptase** and **chymotrypsin** are used in western medicine.

**Lifestyle practices which enhance sperm quantity and quality**

1. **Work/living environments.** Wherever possible, contact should be reduced with pesticides/herbicides, heavy metals, radiation, petrochemicals and other toxic substances. Research by the Danish Organic Farmers’ Association showed that organic farmers in Denmark had significantly better sperm. As top-level predators we ingest accumulations of toxins in the food chain. This can be minimized by eating organically as much as possible, eating lower in the food chain, supplementing our diet with anti-oxidants. Sufficient levels of zinc are important for the reproductive system and if zinc tests low it should be supplemented at a dosage determined by a qualified naturopath. Zinc may be found in seafood, especially oysters, and pumpkin seeds.

2. **Smoking, alcohol and drugs**
It is of great importance for successful fertilization to avoid smoking, alcohol, cocaine, marijuana and other recreational drugs. Drinking alcohol can lower zinc levels in the body, and drugs can lower sperm vitality and structure. Smoking damages the yin,
increases heat and damp-heat. It lowers testosterone and therefore adversely affects sperm count, motility and morphology.

4. **Temperature of the testicles**

Hot baths and/or spas, electric blankets and tight underwear can cause malfunction in the Sertoli cells within 24 hours and the death of sperm and should be avoided.

5. **Depression/stress**

Depression and stress, a significant part of which may be caused by a couple’s failure to conceive, impair the reproductive ability by interfering with testosterone production and therefore the sperm count, motility and morphology. The stress associated with chronic pain is also very toxic to the body. Daily stress reduction is therefore important as is help in dealing with issues causing internal/external conflicts.

6. **Exercise**

Although there is no doubt that exercise is good for health generally, it is important to calibrate the amount of exercise to men’s individual body condition and capabilities. Too much exercise may cause a temporary change in hormone levels which then causes a decrease in sperm quantity and quality. Extreme sports, especially extreme cycling cause stress on the body and the testicles in particular, and should be avoided.

**Case study:**

Case1. A Japanese woman came to clinic with a history of three failed IVF cycles. Her hormone levels were normal, apart from progesterone which was higher than normal. I gave her acupuncture treatment 1-2/week to which she responded very well, and concentrated on treating her husband’s abnormal sperm.

Semen volume: 3.0ml
Sperm concentration: 10.6 million/ml
Motility: Rapid (a)—0%, (>25%); slow (b)—55%, (a+b > 50%); non-progressive—12%.
Sperm Mar Binding: 10% (>40% positive)

His diagnosis was Spleen & Kidney yang deficiency with damp and blood stagnation.
Formula: dangshen(Radix Salviae Miltiorrhizae), duzhong(Cortex Eucommiae), fuling(Poria), shanyao9Radix Sophorae Subprostrae), chuanxiong(Rhizoma Ligustici Chuanxiong), jixueteng(Culis Spatholobi), sanleng(Rhizoma Sparganii), e zhu(Rhizoma Zedoariae), liujinu(Herba Artemisiae Anomalae), sangjisheng(Ramulus Loranthi) danshen(Radix Salviae Miltiorrhizae) ,zhigancao(Radix Glycyrrhizae).

After two months on this formula his semen results were as follows: Volume: 2.1 ml; sperm concentration: 52 million/ml; Motility: 58%; Normal movement: > 60%; Morphology of motile sperm>14% normal.

The specialist was very happy about this result and the couple decided to try another IVF which was successful and resulted in healthy and beautiful baby boy.

Case2. **Abnormal sperm head:**

A woman came with a history of two miscarriages after three years of trying to
conceive. Her hormone levels were abnormal and her husband’s sperm had deformed heads.
I treated both partners simultaneously.
The husband’s test showed: 38% (<35) abnormal heads, count 40 million/ml (20-250)
The diagnosis was liver qi and blood stagnation:
Formula: chaihu(Radix Bupleuri), sanleng(Rhizoma Sparganii), e zhu(Rhizoma Zedoariae), chishao,(Radix Paeoniae rubra) danpi(Cortex Moutan Radicis), baishao(Radix Paeonieae Alba), jixueteng(Caulis Spatholobi), baihuasheshecao(Herba Hedyotidis Diffusae), taizishen(Radix Pseudostellariae), zhigancao(Radix Glycyrrhizae).
After 1 month, his sperm test showed that the abnormal heads had reduced from 38% to 18% and the sperm count had risen from 40 to 58 million/ml. The motile sperm had improved from 60 to 70%. The woman conceived and carried a healthy baby girl to term.

**Case 3.**
A woman presented with a history of miscarriage at six weeks gestation. Her hormone levels were normal but her husband’s semen analysis showed:
Specimen volume: 1.4ml; sperm count: 57 million/ml; normal morphology: 39% (>60%); abnormal head: 47% (<35%)
The diagnosis was Spleen qi deficiency with damp stagnation.
Formula: dangshen(Radix Codonopsis Pilosulae), baizhu(Rhizoma Atractylodis Macrocephalae), fuling(Poria), zelan(Herba Lycopl), (Rhizoma Sparganii), jixuerteng(Caulis Spatholobi), chuanxiong(Rhizoma Ligustici Chuanxiong), chaihu(Radix Bupleuri), danpi(Cortex Moutan Radicis) danshen(Radix Salviae Miltiorrhizae), shanyao(Rhizoma Dioscoreae), zhigancao (Radix Glycyrrhizae).
After 2 months’ treatment the semen analysis was as follows:
Specimen volume: 4ml; sperm count had risen from 57 to 65 million/ml; normal morphology had risen from 39 to 61%; abnormal heads had reduced from 47 to 28%.
And the couple has a baby boy!

References:
Lyttelton J. Infertility