

## Patient Handout

### **An Integrated Osteopathic Approach (IOA) to human sub fertility**

#### **Introduction**

One of the difficulties of investigating and researching natural approaches to sub-fertility is that there is little commercial benefit from doing so. Most natural approaches use a holistic view of the patient and their partner and as a consequence, diagnosis, treatment and management strategies are developed on an individual basis. However, there is now increasing evidence that natural approaches have a very important part to play in the sub-fertility arena.

**Sub fertility (infertility) affects 1 in 6 couples in the UK. There is increasing awareness that both male and female factors seem to be equally involved.**

As an osteopath, I have always been asked for advice to help treat and manage sub fertility. Initially it was "by the way" as an aside for another presenting complaint. It is becoming increasingly a reason for patient presentation in my private practice in central London. The United Nations says reproductive health is "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity in all matters relating to the reproductive system and to its functions and processes*". I would totally agree.

#### **Sub-fertility**

Sub-fertility/infertility is defined as the inability to conceive and carry a baby to term. The couple should have been having unprotected regular intercourse for a minimum of 18 months for primary sub-fertility (never conceived) and 12 months for secondary sub-fertility (previously conceived). **A diagnosis of sub-fertility does not have to mean childlessness. It can often mean that becoming pregnant is a challenge.**

Learning that you have a fertility problem can lead to painful and difficult emotions, such as confusion, frustration, fear, isolation, guilt and shame, anger and sadness. You and your partner can be affected by sub-fertility in different ways because men and women have been socialised to think, feel and act in different ways. Failure to conceive affects both self-esteem and self-worth.

As a consequence, it is important to approach the problem as a team through commitment of both partners. Listen, be supportive to each other, be sensitive and be patient. Over 50% of couples with sub-fertility of 2 years or more eventually become successful in achieving pregnancy. Men are also showing an increasing number of sperm abnormalities.

A quarter of all couples planning a baby have trouble conceiving. It is not uncommon for a couple without any fertility problems to take 2-3 years to conceive. 1 in 4 women miscarry and some experience repeated miscarriages, as often as 10 times.

Conception is the complex process that depends on everything working properly at a number of stages. Firstly, your hormone balance must be correct so that the egg develops normally. Secondly, you must be ovulating so that the egg can be released. Thirdly, you must have sex at the right time in your cycle (there may be only 2 or 3 days a month when you are fertile). In addition, your partner must have a good sperm count and possess healthy sperm, which are capable of penetrating your cervical mucus to reach the egg. Then the egg has to be captured by the fallopian tube and be fertilized. Finally, once the egg has been fertilized the embryo has to implant securely in the lining of the womb, which means that the right levels of the hormone progesterone should be present to maintain the pregnancy.

### **Possible causative factors for Sub-fertility**

#### ***There is a male factor in 50%.***

This can be caused by high levels of free radicals produced by a variety of lifestyle factors such as smoking, drug use, caffeine, alcohol, environmental pollutants etc.

#### ***There is ovulatory failure of the woman in 27%.***

Ovulatory failure can be caused by a variety of different factors

#### ***There is tubal damage of the woman in 14%***

Post infection changes can lead to tubular occlusion and adhesions usually from Sexually Transmitted Diseases (STD's); gonococci and chlamydia, being the most common.

#### ***Endometriosis or other causes account for 5%.***

This is a condition where the lining of the womb, the endometrium grows in places other than the womb, such as the fallopian tubes, the ovaries, the bowel and the bladder. The womb lining no matter where it is situated then responds to the

natural hormone cycle and will bleed when the period occurs. This can be

extremely painful especially in those sites where there is no natural escape for the blood and inflammation may occur. Endometriosis can affect female fertility because it can cause scarring and blockages inside the pelvic cavity. It is thought that 50% of women with endometriosis may have problems getting pregnant.

***There is no significant medical explanation for sub-fertility in 30% of couples i.e. these cases are idiopathic.***

Of the couples that seek orthodox medical help, the group of 30% who are told they have unexplained infertility (idiopathic), doctors can only offer limited treatment.

Idiopathic aetiology can often be described as functional aetiology, i.e. a disturbance in normal reproductive function, which is not disease related.

**I believe that sub-fertility is multi-factoral problem. My Integrated Osteopathic Approach (IOA) explores 3 significant functional domains of health.**

My hypothesis proposes that in the group of unexplained sub fertility, 30% of the total; there may be a functional problem. In an Integrated Osteopathic Approach, I mostly deal with patients who have complex problems, which have not been resolved by other methods including conventional and complementary medicine. Looking at biomechanics, biochemistry/nutrition and psycho/social factors and intervening where there seems to be a disturbance in function has resulted in many successful outcomes.

I believe that human sub-fertility like other complex problems may be amenable to this Integrated Osteopathic Approach.

### **Nutritional/Biochemical Factors in Sub-fertility**

Body Mass Index (BMI) is an index comparing weight to height. An acceptable range for a woman trying to conceive is between 19-30. **A Harvard fertility expert has explored the relationship between low BMI and sub-fertility.** Her conclusions are that if a woman has a BMI of 18 or 19 even though they often still menstruate; very often they are also infertile. She believes this is because of low levels of leptin, a circulatory hormone to do with fat metabolism. If this hormone is low, she hypothesises that this causes a decrease in egg production.

However, if a woman is overweight or clinically obese with a BMI of greater than 30, this can also have an impact on fertility and can stop the woman from ovulating. Studies have shown that just losing a small amount of weight, 10% for instance can be enough to increase fertility by stimulating ovulation, improving hormone balance and making periods more regular.

### **Alcohol**

Research has shown that drinking alcohol causes a decrease in sperm count, an increase in abnormal sperm and a lower proportion of motile sperm. Alcohol also changes a man's fertility by changing his hormone levels because it can alter the way testosterone is produced and then released. Alcohol also stops the absorption of nutrients like zinc, which is one of the most important minerals for male fertility and magnesium, which is important in the health of the adrenal glands. Researchers also discovered that women in a survey who drank less than 5 units of alcohol a week were twice as likely to get pregnant in 6 months compared to those who drank more.

A study published in the British Medical Journal concluded that women should be "warned to avoid alcohol, when trying to conceive"

### **Smoking**

Tobacco contains horrible substances such as carbon monoxide, nitrous oxide, ammonia, aromatic hydrocarbons, hydrogen cyanide, vinyl chloride, nicotine, lead and cadmium.

Although, many women smokers resolve to give up when they get pregnant, they don't realise that by smoking they are reducing their chances of getting pregnant in the first place. Not only that, but you don't usually know that you are pregnant for the first couple of weeks and the baby will be taking in all of the tobacco smoke in the mean time. The man's fertility is also affected by smoking. It decreases his sperm count, makes his sperm more sluggish, increases the number of abnormal sperm and reduces testosterone levels. In addition, smoking reduces the levels of Vitamin C in the blood. Lack of Vitamin C encourages sperm to clump together. One study showed how male fertility was improved by giving men 500mg of Vitamin C twice a day.

### **Recreational drugs**

Marijuana, Cocaine, Heroin, Ecstasy and in fact almost all recreational drugs can have an impact on both male and female fertility.

### **Medications and Supplements**

If either of you are taking medication while you are trying to conceive, you should speak to your doctor about which drugs are medically essential and which are not. For example, even some non-steroidal anti-inflammatory drugs, often used in the relief of muscular aches and pains can stop ovulation and are also thought to affect semen quality.

### **Age**

There is no doubt, fertility declines after the age of 35. This is because the women's eggs have been in her body since before she was born. So, by the age of 35 those eggs are older than they were when she was 25. Therefore, it can take longer to get pregnant and the risk of miscarriage is higher.

### **Caffeine**

A number of studies have implicated caffeine consumption in affecting fertility.

### **Environmental Hazards**

Xenoestrogens are oestrogen like chemicals that are found in the environment caused by pollutions from pesticides and the manufacturing of plastics.

These seem to be implicated in fertility problems.

### **Household Chemicals including Perfume and Aftershave**

Professor Robert Winston, the leading UK infertility expert asks all patients not to wear perfume or aftershave in his clinic. It is important to avoid most chemicals when trying to maximise fertility.

### **Radiation**

These are predominantly from x-rays. It is important to minimise the use of medical x-rays, as the male testes is one of the most radiosensitive tissues.

In addition, non-ionising radiation, for example as produced by mobile phones may be implicated. Microwave cooking tends to destroy the fat-soluble vitamins like Vitamins A, D and E and some of the essential fatty acids, which are vital for both male and female fertility.

## **Psycho/Social/Emotional Factors in Sub-fertility**

### **Stress**

Doctors are divided over the importance of stress in infertility and yet studies have shown that it can affect a man's fertility to the point where not only the sperm count is reduced, but also the quality of the sperm.

Stress can also affect a man's hormonal balance, lowering his levels of testosterone and luteinizing hormone. The release of the stress hormone prolactin in response to a crisis can affect a woman's ability to conceive and in extreme cases can stop her ovulating. It seems to be nature's way of protecting women from getting pregnant at a time when they find it hard to cope. Women going through a bereavement or some kind of trauma for instance can stop having periods altogether.

Couples trying for a baby often experience high levels of stress particularly if medical intervention is required. The longer it takes of course, the more anxious you become and the more chance there is of stress inhibiting your fertility.

### **Biomechanical factors in sub-fertility**

Osteopathy is a system of medicine, which lays its main emphasis on the relationship between structure and function (anatomy and physiology). The internal viscera, such as the male and female sexual organs, can become dysfunctional through a variety of different events such as direct trauma, indirect trauma, posture, sub-conscious patterns of tension due to psycho/emotional causes, reflex reactions to somatic dysfunction mediated through the complex neuro/vascular and hormonal pathways to name but a few. Osteopaths usually use the skill of palpation to assess the abnormal movement patterns expressed as mobility and motility in both the neuromuscular skeletal system and the visceral system. Conception is a complex process, which relies on optimum functioning of both male and female partners. The neuroendocrine immune network plays a big part in this complex process. This network orchestrates the varied responses of the body to the presence of somatic dysfunction. The 3 primary drivers initiating the cascade of chemical messengers in the general adaptive response are somatic, visceral or emotional dysfunction. Numerous studies have demonstrated that a general demise of health occurs following chronic exposure to the stress related chemical messengers. This decline in health typified by suppressed immune functions is related to profound alterations in the activity of the neuroendocrine immune network.

**There has been limited research into Osteopathic manual treatment and sub-fertility but there is some evidence that biomechanical intervention in sub-fertility can be helpful.**

## Advice

### When to have intercourse

Nature has designed both male and female reproductive systems to work in harmony, each hormone dependent on the other and all working together as a whole system. Any imbalance in any part of this delicate process will affect the production of hormones and with it the chances of conceiving or staying pregnant once fertilisation has occurred.

### A Normal Female Hormonal Cycle

On average a woman will have a complete menstrual cycle every 28 days; that is, every 28 days a period will start. Some women regularly have shorter cycles and others longer: this is not unusual and not abnormal. Keeping a diary of your menstrual cycle will give me important information for assessing your fertility. The first day of the menstruation, that is the first day of bleeding, is called Day 1 of the cycle.

Within each ovary there are thousands of oocytes (unfertilized eggs) at different stages of growth and development. Each oocyte starts development with its own complement of granulosa cells. As the oocyte grows and the number of granulosa cells multiply (forming concentric layers around the oocyte) a second layer of cells, called theca, begin to surround the layers of granulosa cells. The theca cells are always kept apart from the granulosa cells by a basement membrane. The oocyte, the granulosa cells and the theca cells form a functional spherical unit known as a follicle.

The first week of the menstrual cycle is called the early follicular phase. During this time 10 to 20 follicles which were 2 to 5mm in diameter at the end of the previous cycle (it may have taken these follicles at least 8 months to grow to this size) are prompted to grow and develop very quickly by the increasing concentrations of a pituitary hormone, called follicle stimulating hormone (FSH), in circulation. These 10 to 20 follicles are now absolutely dependent on FSH during this time.

If there are insufficient amounts of FSH secreted from the pituitary at this time then the follicles' growth and development will falter and eventually the follicles will in effect "die", a normal ovarian process called atresia (in fact, 99.9% of all follicles in the ovary eventually undergo atresia).

At the end of the first week the pituitary abruptly stops releasing a lot of FSH. The reason for this is that the 10 to 20 follicles have started to secrete a steroid hormone, oestrogen. One of oestrogen's effects is to inhibit the release of FSH. Almost all the follicles are still absolutely dependent on FSH for their growth and development and for these follicles the large fall in FSH concentrations is sufficient for them to start undergoing atresia. Once a follicle has started the process of atresia it is committed to continue. One, or maybe two, of the 10 to 20 follicles will have grown and developed sufficiently to a stage where they can survive this drop in circulating FSH concentrations. The surviving follicle(s) has become much more sensitive to FSH so the small amounts being released by the pituitary are sufficient to support it and it has also switched much its FSH dependency to another pituitary hormone, luteinizing hormone (LH). The fall in FSH concentrations in circulation marks the beginning of the second part of the follicular phase (the late follicular phase). During this phase, the follicle(s) grows and develops even faster than in the previous period. It grows from a diameter of about 8 to 10mm to over 20mm, and it secretes increasing amounts of oestrogen.

When the oestrogen concentrations in circulation have exceeded 300pg/ml for more than 2 days a change occurs in the ways the hypothalamus (a part of the brain involved in regulating the reproductive system) and the pituitary respond to oestrogen. Instead of oestrogen inhibiting LH release from the pituitary it suddenly starts stimulating LH release. This soon results in a massive release of LH: the LH surge. The LH surge is critical for ovulation to occur, it causes the oocyte in the follicle that is about to ovulate to prepare itself for the possibility of fertilization and it triggers the follicle to initiate changes that will allow it to ovulate. Approximately 24 hours after the peak of the LH surge ovulation occurs.

Ovulation involves two key events: the oocyte is released from the follicle and is swept into the oviduct and the follicle undergoes a series of radical changes resulting in its transformation into a structure called the corpus luteum. This marks the beginning of the luteal phase which is usually about 14 days in most women. Within a few days the corpus luteum begins to secrete large amounts of progesterone and some oestrogen. How long the corpus luteum does this depends on whether or not the oocyte is fertilized.

If fertilization occurs the embryo has to make its way to the uterus and successfully implant

(embed) itself within the lining of the uterus, the endometrium. Once implanted the embryo releases a hormone called human chorionic gonadotrophin (hCG). Human CG is very similar to LH and is able to act on the corpus luteum to keep it producing progesterone and oestrogen. The continued health and therefore function of the corpus luteum is essentially for the maintenance of pregnancy until the placenta has grown and developed (usually about week 7 of pregnancy). The embryo therefore has less than 14 days to signal to the maternal system that it is present.

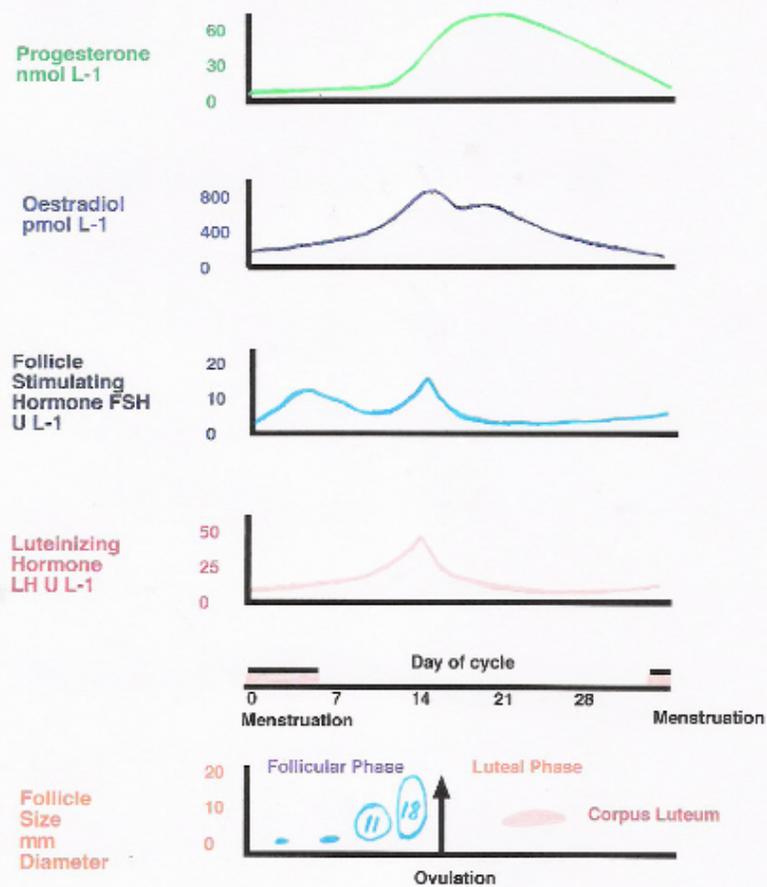
If the embryo fails to send out a strong enough signal or if fertilization does not occur then no hCG is produced so after about 14 days the corpus luteum undergoes a process called luteolysis. Luteolysis is another degenerative process and the first thing that it involves is the cessation of all progesterone and oestrogen secretion. The cells of the corpus luteum will be reabsorbed by the ovary over the next several weeks and eventually there will be no trace of that corpus luteum. The cessation of progesterone and oestrogen is rather abrupt and this marks the beginning of a new cycle. The endometrium was dependent on both the progesterone and oestrogen produced by the corpus luteum for its health and well-being so it now sloughs away and menstruation begins. The fall in both the steroids results in an increase in FSH release from the pituitary and the FSH stimulates 10 to 20 follicles that happen to have reached 2 to 5mm in diameter to enter a rapid phase of growth and development. A new cycle begins.

If the man's sperm count is low or a high percentage of sperm have an inadequate shape, or if motility is slow or vaginal conditions are too acidic the chances of fertilisation are reduced.

It is for all these reasons that conception is a complicated process.

Male and female reproductive physiology must be functioning optimally and sexual intercourse must be taking place at the right time of the woman's cycle for successful fertilisation to take place.

Hormonal and follicular changes during a "normal menstrual cycle"



### **Getting your timing right**

The bottom part of the womb (the cervix) changes quite dramatically during the menstrual cycle in response to the hormones being produced. Around the time of ovulation in response to the high concentrations of oestrogen, the cervical mucus becomes clear and stretchy and the amount produced increases. This mucus allows sperm to penetrate easily and make their way to the uterus (the mucus produced during the rest of the cycle actually acts like a barrier: sperm find it very difficult to swim into and through). Since the egg can only survive for up to 12- 24 hours and the sperm can live for 72 hours in the fertile alkaline mucus in the upper reaches of the female reproductive tract there is only a short window of time each month in which you can conceive. One way of identifying your fertile period is to recognise the changes in your cervical mucus.

There are a number of ways in which you can check your fertility.

### **Taking your temperature:**

Whilst this costs nothing, bar the cost of a good thermometer, it often causes a lot of stress to the couple and sometimes because the change in temperature is small it can be overlooked or be inaccurately recorded, therefore I don't recommend this method.

### **Ovulation Kits:**

DIY kits obtainable from the pharmacy enable you to predict ovulation by measure the LH surge in the early morning urine sample. When your LH surges it is likely that ovulation will occur within the next 24 to 36 hours, so it is advisable to have intercourse during this time. With the help of a monthly cycle diary and a DIY kit it can give you a good way of accurately predicting your ovulation time.

**The Health Equation Sub-Fertility Protocol – How it works**  
**Diagnostic Protocol.**

After downloading and completing the application form from our website, or calling my PA to obtain one, you will be sent a series of questionnaires, to be completed by both male and female partners. You will be required to fill in these questionnaires, which are mostly to do with lifestyle, your medical history and stress.

You will also be asked to complete a 7-day diet diary and caffeine intake estimation. It is important that absolutely everything you take into your body, whether it is food, drink, drugs, supplements, cigarettes etc are recorded on this sheet of paper.

This will obviously give me an indication as to your macro nutrients and micronutrients, you are taking into your body and help flag up any areas for concern. This will give me a lot of information regarding the nutritional/biochemical factors, which again, may have an impact on your sub-fertility.

I will analyse the questionnaires and if I think you may fulfil the necessary criteria you will be asked in for a 60-minute Diagnostic Consultation (separately for male and female partners). **For the female, this will need to take place between days 3-6 of the female cycle, for specialised blood samples to be taken.**

Your set of questionnaires will be checked for omissions, a full case history and clinical examination performed, including capnometry and HRV monitoring (Heart Rate Variability) and comprehensive blood tests for both partners will be carried out (Haematology and Biochemistry, hormonal and nutritional markers).

I will undertake a verbal interview with both of you, our so-called case history. This will give me an understanding of your current situation, your previous medical history, general health and this will be followed by a physical examination, where you will be required to undress down to your underwear. You will have a routine urine analysis; your height and weight will be recorded for Body Mass Index purposes and your body fat percentage estimated.

I will perform some useful screen procedures such as blood pressure, pulse, and abdominal examination and a neuro-musculo-skeletal examination and visceral examination to find out the relevant biomechanical/neuromuscular and visceral factors, which may be impacting on your fertility.

The blood tests for the female partner include a baseline evaluation, a haematology/biochemistry screen include some important minerals, levels such as iron (ferritin), Vitamin D 25OH, zinc and magnesium, thyroid function and HbA1C (3-month glucose marker). They will also include a female hormonal profile (LH, FSH, Prolactin, Oestradiol), day 21 Progesterone and Anti Mullerian Hormone (AMH), this is a marker of ovarian reserve.

Male partners will also be required to have a similar panel of baseline blood tests. In addition to a male hormonal panel, LH, FSH, Prolactin, SHBG, Testosterone and Free Androgen Index. A Comprehensive Semen Analysis will be organised at the male partners convenience.

Another unique aspect of my protocol is based on the hormonal markers cortisol and DHEA-s, which are adrenal cortex hormone and this gives us an indication of long-term stress. DHEA-s is a pre-hormone; it can be used to make other hormones including oestrogen and testosterone. Low levels of DHEA-s may be implicated in sub-fertility. This will be measured through the initial blood tests for both male and female partners.

**Appropriate patients will also be offered the additional Tests which are priced separately to the Cost of the Diagnostic Protocol Package:**

**Male:**

SpermDNA Fragmentation test to supplement the initial comprehensive sperm analysis; this can be done on the initial sperm sample, which can be frozen for 1 month.

**Female:**

Transvaginal pelvic ultrasound scan to look at the structure and function of the reproductive organs. Those who have not had this done will be referred accordingly to a local clinic.

### **Follow-Up Consultation:**

After the Diagnostic consultations and once I have received all the diagnostic investigations you will receive a comprehensive report including a functional blood analysis. You will both be invited back for a joint 30-minute consultation to discuss my findings and my interpretation of the results and to discuss a proposed strategy for improving your fertility status.

### **Patients will be offered either the Sub-Fertility Treatment Protocol at The Health Equation or referral to a private assisted conception unit.**

The 3-month treatment protocol I will normally be using will be based on the following 6\* 30-minute Osteopathic treatment sessions, split between the partners depending on need, dietary advice, breathing stress management advice and including a 3-month course of nutritional supplementation.

### **Biomechanical/Neuromusculoskeletal/visceral:**

Using osteopathic manipulative techniques. These techniques can range from very gentle cranial-sacral techniques and visceral Osteopathic techniques to the more vigorous manipulative techniques and a whole host of techniques in the middle. Choice of technical approaches will be discussed with you as to your preferences in addition to my recommendations for efficiency.

### **Nutritional/Biochemical:**

With the results from your diet analysis and your blood tests I will make specific nutritional recommendations, based on your individual metabolism. I will also be recommending some nutritional supplements, depending on individual circumstances.

### **Psychosocial:**

Throughout our Integrated Osteopathic treatment sessions, I will also be talking about stress management strategies, suggest books for self-help. Many patients do not breathe correctly, it may be that I will suggest a specific breathing re-education strategy for some patients.

In certain cases, I may recommend follow-up treatment with a Hypnotherapist, if I feel there are some deep-rooted emotional issues or you find it difficult to relax.

The protocol will last for a period of 3 months, it is however, suggested to wait another 3 months on top of that to give your body a chance to work (for example sperm takes 3 months to mature). Natural approaches to sub-fertility are subtle and my fundamental belief as an Osteopath is your body has an inherent ability to get better from most of the problems we have, sub-fertility being no exception. Given some time, care and nurturing it is quite possible to achieve conception the natural way.

**However, it may be obvious from the case history, lifestyle discussions, nutritional analysis and blood investigations that there may be a more significant medical reason for your sub-fertility and you will be referred to the most appropriate medical specialist, or a fertility unit offering assisted conception.**

Advice to the Male Partner:

It is vitally important that your male partner fully engages in this process with you. It is important for your partner to have a sperm test examining the amount of sperm and motility of the sperm and this will need to be confirmed prior to you embarking on our protocol. He will also need to have a DNA Fragmentation test as recent research has suggested this can be helpful in deciding the extent of the male factor. *DNA fragmentation is an excellent marker for exposure to potential reproductive toxicants and a diagnostic/prognostic tool for potential male infertility*

In addition, it will be suggested that you and your partner reduce alcohol and caffeine to an absolute minimum and stop smoking.

It is unlikely you will get reimbursed from an insurance company for any sub-fertility treatment. However, if you have a legitimate medical problem, which your insurance company will cover you for such as back pain, it may be possible to claim for the mechanical treatment of that problem.