IVF4U

It's all about YOU

Confidential Report

Provided by www.ivf4u.com

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Your general health and wellbeing

IVF4U's Fertility Report is designed to improve your chances of becoming pregnant. Your personalized report provides you with the latest fertility treatment information and treatment options that have been specifically tailored to address your particular personal circumstances. This provides the knowledge you and your partner need to actively participate in treatment decisions with your specialist.

The information provided in your report is based on current evidence based knowledge and follows on from decades of clinical IVF experience, scientific research, international publications and the recommendations of societies including the American Society of Reproductive Medicine, the European Society of Human Reproduction and Embryology, the British Fertility Society, the Middle East Fertility Society, the Japan Society for Reproductive Medicine, the Japan Society for Obstetrics and Gynaecology, the Chinese Society for Reproductive Medicine, the Indian Society for Assisted Reproduction, the Brazilian Society of Assisted Reproduction, the World Endometriosis Society, the Fertility Society of Australia, the International Society for Mild Approaches to Assisted Reproduction, the Russian Association of Human Reproduction, the Asia Pacific Initiative on Reproduction, the International Federation of Fertility Societies, the Society of Obstetricians and Gynecologists of Canada, the Royal Australian and New Zealand College of Obstetricians and Gynecologists, the Royal College of Obstetricians and Gynecologists, and the International Federation of Gynecology and Obstetrics.

When it comes to fertility treatments, there is so much information available that it's difficult to know which information is relevant to you and more importantly, which information you can use to improve your chances of becoming pregnant. There are over 100 million pages of information available on the Internet, a large portion of which is outdated and potentially dangerous. While many books are written on the subject, the enormous volume of ongoing research into clinical and laboratory techniques associated with reproductive technology ensures most books are outdated within weeks.

In contrast, the comprehensive information contained in your personalized IVF4U Fertility Report includes the very latest information and treatment options available. IVF4U is a dynamic interactive online service that presents information in an easy to use and easy to understand format. IVF4U incorporates the most current evidence based research following approval by our eminent International Editorial Board, which is chaired by Professor Gab Kovacs AM. Professor Kovacs has been Professor of Obstetrics and Gynecology at Monash University since 1991. You can find more detailed information on Professor Kovacs and other members of the Editorial Board in section 6 of this Report.

By using the information you provided during your assessment, IVF4U has created a report that considers your personal history and physiology and presents current clinical and laboratory options that relate specifically to your current circumstances.

Your report consists of five separate components and follows the same order, style and design as the online assessment you recently completed on IVF4U.

Section 1 reviews **your general health and wellbeing** in relation to your fertility and provides advice on how to focus your efforts on improving your chances of becoming pregnant.

Section 2 reviews **your obstetric and gynecological health and history** in order to identify specific areas that may be preventing you from being able to become pregnant. When you are finding it difficult to conceive, a thorough review of your obstetric and gynecological history is essential. There are so many factors that can impact on your fertility that it is important to identify them and design your treatment accordingly. All too often treatment is commenced

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without taking a thorough history and performing all the appropriate investigations.

While this may seem like the fast track to becoming pregnant, you risk missing the opportunity to identify important elements of your reproductive health that, if addressed, could result in an earlier success. Taking the time to be thoroughly assessed and investigated, rather than launching into a one size fits all treatment plan, is often a better way to become pregnant while avoiding unnecessary disappointment and costs.

Section 3 reviews and analyses the results of any **fertility investigations** you have had in relation to your fertility. It provides you with an assessment of your reproductive health and identifies issues that may affect your efforts to conceive. It also provides you with recommendations and explanations of the investigations that you should expect to undergo prior to commencing any fertility treatments. Failure to fully investigate a woman's reproductive health prior to commencing ART is one of the key reasons for treatment failures. You cannot hope to receive the most effective treatment for your particular physiology and history unless your circumstances are fully investigated and understood. This section reviews the investigations you have had to date and recommends any further investigations that may be considered appropriate. It describes the investigations, discusses the potential results and specifies how these results may affect you and your efforts to become pregnant.

Section 4 reviews **male reproductive health** and outlines the necessary investigations that can be expected in assessing male fertility prior to commencing any fertility treatments. It also provides current fertility treatment options in relation to male infertility.

Section 5 reviews your current **treatment and treatment options** and provides you with information about treatment protocols that may be best suited to your circumstances. It provides discussions on the latest treatment trends and indicates which may be best suited to your circumstances. This section describes the process of IVF, discusses the role that fertility drugs play, how they work and what drug protocols may be best suited to you. This section also reviews the various laboratory techniques that are used in IVF and discusses the processes currently being shown to be associated with higher success rates.

Section 5 also delves into other areas of ART including the options of donor eggs and donor embryo.

The primary aim of section 5 is to provide you with the latest evidence based information in order to prepare and empower you and your partner to be active participants in the decision-making processes necessary to become pregnant.

Section 6 includes information on the IVF4U Editorial Board and detailed illustrations of natural ovarian and stimulated IVF/ICSI cycles.

Where additional information has been provided, you may find on occasion that certain information is repeated. This is because sometimes the repeated information is necessary to fully explain an additional topic.

Age considerations

Age is one of the most important factors that influences your ability to become pregnant either with assisted reproductive technology (ART) or spontaneously. The fertility of both men and women declines naturally with age and the decrease in fertility starts at 30 years of age. For women the probability of becoming pregnant decreases 3 to 5% per year after the age of 30 and at a faster rate after 40. Your probability of conceiving is greater because you are less than 37 years of age. Optimizing your chances of an early pregnancy will also depend on your general health and wellbeing and your gynecological health.

Given that you are now 35 and have been attempting to conceive for over 2 years it is appropriate to use ART to assist you in becoming pregnant. Statistics show that success with ART declines rapidly as you age so starting early will optimize your chances of achieving an early pregnancy. You should ensure that your treatment is based on the results of a thorough fertility assessment and appropriate investigations.

During the course of your investigations you may find that the cause of your inability to conceive is identified and can be remedied, allowing you to move forward and conceive spontaneously. Thorough investigation and timely, focused treatment will be crucial to your efforts in achieving a pregnancy.

Your body mass index

Body mass index (BMI) is an important component of your reproductive health assessment. A BMI is an estimate of your body fat based on your weight and height. There is now sound evidence that shows BMI has a significant impact on fertility and childbearing.

An ideal BMI is between 18.5 and 25.

Your body mass index is 25.61 and this is considered to be too high. A high BMI can result in hormonal imbalances that can interfere with regular ovulation, reducing your likelihood of becoming pregnant.

Studies have also shown that a high BMI can halve the probability of achieving a pregnancy when using IVF. A high BMI is also associated with a number of peri-natal complications including gestational diabetes and hypertensive disease in pregnancy. It can also increase the risks of some procedures associated with fertility treatments including follicle stimulation and egg collection.

The loss of 12 to 16 lbs (5 to 7 kgs) can significantly improve your chance of achieving a pregnancy. You need to consider starting a weight reduction program aimed at reducing your BMI to between 18.5 and 25.

Of course, losing weight isn't always easy and a dietician or nutritionist can assist you in achieving a healthy BMI.

A high BMI can also be associated with polycystic ovarian syndrome (PCOS). PCOS reduces your fertility because it interferes with your ovulatory cycle. Your Fertility Specialist can investigate whether your high BMI is related to PCOS.

This can be undertaken by performing a number of simple tests (these are outlined for you in section 3 of this report).

Supplements

Your daily dose of folic acid is an important way for you to prepare for a healthy pregnancy. While it can become somewhat monotonous taking supplements every day, it is important that you continue with your daily dose of folic acid through your first trimester of pregnancy.

There is strong evidence to support the fact that folic acid is one of the few nutrients known to reduce the risks of fetal brain and spinal development disorders. These disorders are known as neural tube defects and include conditions such as spina bifida and anencephaly.

The current recommended daily dose of folic acid is no less than 500mcg per day (up to 1,000mcg per day). Higher dosages of folic acid are recommended for women with diabetes, women taking anti epileptic medication, women on folic acid antagonists and those with a familial history of neural tube defect. In the case of having had a previously affected child, 5mg (5,000mcg) per day is recommended.

In addition to folic acid, many countries are now advocating the inclusion of iodine supplements. Low levels of iodine can lead to an increased risk of miscarriage, premature labor and an increased risk of intellectual impairment. The current recommendation for iodine supplements is 150mcg per day to be taken prior to pregnancy, during pregnancy and when breast-feeding.

As with folic acid, it is important to discuss the need and dose of these supplements with your Fertility Specialist to ensure they do not interact adversely with any other medications you may be on or interfere with any medical conditions you may have.

Your immunity

The fact that you have had your immunity status checked shows that you are preparing for your pregnancy well. The ongoing monitoring of your immunity status is an important part of your preparation for a healthy pregnancy.

Rubella and chickenpox are common everyday viruses that can seriously impact your pregnancy and harm your developing baby. You may have been vaccinated against rubella as a young women. However, the effectiveness of the rubella vaccine diminishes over time and you should have your immunity checked every two to three years to ensure you are not at risk of contracting the virus when you are trying to get pregnant.

Your obstetric and gynecological health and history

There are three basic factors that have to be fulfilled in order for you to achieve a pregnancy:

- You have to be producing and releasing healthy eggs (ovulating). This requires you to be producing the necessary balance of hormones to stimulate ovulation and for you to have a healthy supply of good quality eggs.

- The right number of healthy sperm have to be in the right place at the right time. This means that the sperm need to be able to travel up into the fallopian tube and be capable of fertilising your egg.

- Both your uterus and your fallopian tubes need to be healthy and functioning normally. This means your fallopian tubes have to be patent (open) and able to collect the released egg from the ovary and then direct the fertilised egg down into a healthy uterus. There can be nothing preventing the sperm from travelling up into the uterus and into the fallopian tubes where fertilisation occurs. Your uterus needs to be free of anything that can prevent embryo implantation.

If any of these three factors are impaired then a pregnancy is unlikely to occur. There are instances where a pregnancy fails to occur even though all 3 factors are investigated and assessed to be normal. This is known as unexplained subfertility. Unexplained subfertility accounts for up to 20% of couples who present having been unable to conceive.

Some couples with unexplained subfertility will conceive on their own this month, next month, within a year or sometime beyond that. Others succeed using assisted reproductive technology (ART).

Effective fertility treatment is aimed at identifying, where possible, which of the three factors are preventing a pregnancy from occurring and developing treatment plans that are focused on overcoming the barrier.

A thorough patient history and a comprehensive clinical assessment is critical in the design of effective, individualised fertility treatment plans. This section of the report reviews your personal obstetric and gynecological history and discusses the potential impact it may be having on your ability to achieve a pregnancy.

Your pap smear

As part of your preparation for a healthy pregnancy, and your general health, it is important to ensure that you maintain regular health checks, including pap smears. You may want to consider including high vaginal swabs in your next pap smear. High vaginal swabs test for a variety of organisms that can impact your fertility and the chance of a healthy pregnancy. The indications for high vaginal swabs are outlined in section 3 of this report.

Your menstrual cycle

Your menstrual cycle is a reflection of your ovarian cycle. At the time of your birth you had approximately 400,000 potential eggs in your ovaries and across your lifetime this number diminishes through natural attrition and through the process of ovulation. While the rate of decline is approximately 1,000 per month, the rate of decline is different for every woman. The number of eggs remaining in your ovaries is known as your ovarian reserve. Taking the oral contraceptive pill (OCP) does not delay the attrition of your eggs, nor will the use of fertility hormones speed up the loss of potential eggs.

Your ovaries should mature and release an egg every 21 to 35 days. The egg released is then available to be fertilised. If the egg is not fertilised the uterine lining sheds, you menstruate and the cycle repeats itself. The key hormones involved in your ovarian cycle (the monthly development, maturation and

release of an egg) are:

Follicle stimulating hormone (FSH). FSH is known as a gonadotropic hormone. FSH is produced by the pituitary gland, a small gland located at the base of your brain. FSH is primarily involved in the stimulation of ovarian follicles and the maturation of the eggs contained within the ovarian follicles.

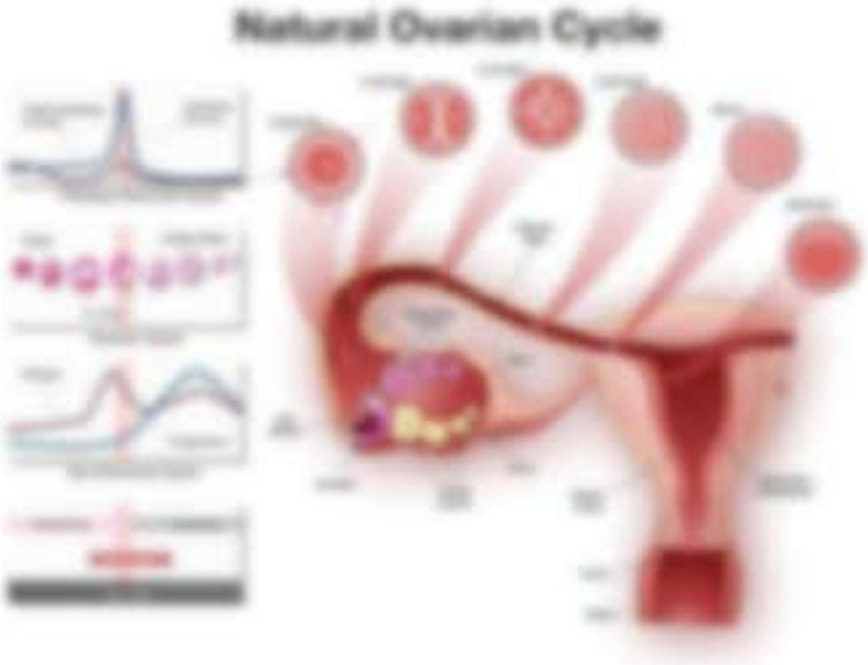
Luteinizing hormone (LH). LH is another gonadotropic hormone and is also produced by the pituitary gland. It is the rapid rise in LH levels that triggers ovulation and drives the final maturation of your eggs just prior to ovulation.

Gonadotropin releasing hormone (GnRH). GnRH is secreted by the hypothalamus (a small gland at the base of your brain). Although GnRH levels cannot be measured, GnRH is considered to be the hormone that drives the reproductive system because it is responsible for the synthesis and release of the gonadotropins FSH and LH.

Estrogen. Estrogen is secreted by your developing ovarian follicle. As the follicle grows estrogen levels rise, peaking at the time of ovulation. Rising estrogen levels moderate the release of FSH. After ovulation estrogen continues to be secreted by the ruptured follicle (known as the corpus luteum). Estrogen plays an important role in preparing the uterus for embryo implantation.

Progesterone. Progesterone also plays an important role in preparing the lining of the uterus (endometrium) for pregnancy and is produced by the corpus luteum.

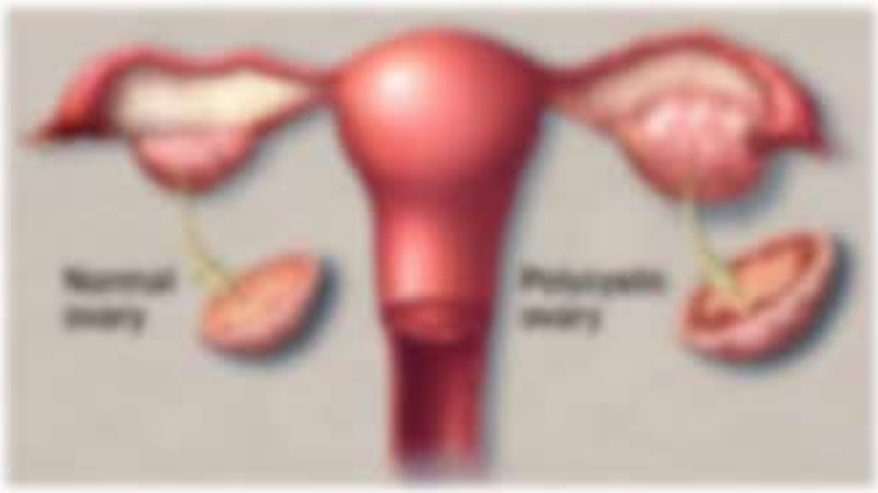
The following diagram illustrates the elements of a natural ovarian cycle. A large copy of the illustration is attached at section 6 of this report.



On day one of your natural ovarian cycle (the first day of menstrual bleeding) your ovaries start to develop follicles. Inside each follicle is an egg. In response to FSH levels several follicles will start to mature, although only one follicle will grow to become the dominant follicle and release an egg at the time of ovulation. The dominant follicle grows for about 10 to 12 days, until it reaches about 18 to 20 mm in size. FSH levels then start to fall as estrogen levels rise. When a critical level of estrogen is reached (signifying that the dominant follicle is mature) the LH level surges. The surge in LH causes the egg to undergo its final maturation. It causes the follicle to rupture and the egg inside is released. This is the moment of ovulation. This typically occurs on day 14 to 16 of a normal menstrual cycle.

Once ovulation has occurred, the ruptured follicle forms what is known as the corpus luteum. The corpus luteum usually has a 14 day life span. If a pregnancy does not occur then the corpus luteum slowly shrinks and atrophies causing progesterone and estrogen levels to fall. The uterine lining sheds (menstruation) and the cycle repeats itself. If a pregnancy does occur then the early embryo produces a hormone called human chorionic gonadotropin (hCG), which then maintains the corpus luteum. This then continues to produce estrogen and progesterone to support the endometrium, to allow the embryo to implant.

Your irregular menstrual cycle is probably related to your diagnosis of polycystic ovarian syndrome (PCOS). PCOS is one of the leading causes of infertility in women. Polycystic ovaries occur when the ovaries repeatedly fail to release the eggs from developing follicles. When this occurs the follicles will fail to develop, shrivel up and the remnants will remain located around the surface of the ovaries. The condition is diagnosed on an ultrasound examination and by definition PCOS is present if there are 12 or more follicles within at least one ovary. PCOS is diagnosed if there are PCOS ultrasound findings and some clinical symptoms including irregular menstruation or symptoms associated with an excess of male hormones (androgens) produced by the ovary. These include obesity, acne, pimples and increased hair growth.



During fertility treatment, women with PCOS tend to be very sensitive to follicle stimulating hormone (FSH) and will easily over stimulate, making them more susceptible to ovarian hyperstimulation syndrome (OHSS). It is important to note that if you have been shown to have polycystic ovaries it does not necessarily mean that you have polycystic ovarian syndrome. You can have polycystic ovaries and not suffer with PCOS. If it is confirmed that you have PCOS and require ovarian stimulation your FSH dose will need to be carefully considered and often reduced to avoid ovarian hyperstimulation. Despite the challenges that PCOS presents, women with PCOS can achieve a safe and successful pregnancy using IVF.

There is no single test that can diagnose PCOS. However, there are a number of assessments that will assist in confirming whether you have PCOS or not. They include:

Physical examination and history. PCOS is often associated with other symptoms including an increased BMI, abnormal hair growth, acne and menstrual irregularities. However, you could have all or none of these symptoms and still suffer with the effects of PCOS.

A trans-vaginal ultrasound will look at the size and shape of your ovaries in order to identify any abnormalities. The appearance of multiple cysts in an ovary is used to make the diagnosis of PCOS. It becomes PCOS if symptoms described above are associated with the ultrasound findings.

Blood tests that assess the level of a variety of hormones. These tests commonly include:

- Estradiol
- Progesterone
- Follicle stimulating hormone (FSH)
- Luteinising hormone (LH)
- Free testosterone
- Prolactin
- Anti-mullerian hormone (AMH)
- DHEA
- Sex hormone binding globulin

An oral glucose tolerance test. This test looks to see if you are insulin resistant. Some women with PCOS are also found to be insulin resistant. This means that the production of insulin needs to be higher to maintain normal blood sugar levels. High levels of insulin can interfere with regular ovulation. Metformin is an oral medication that lowers blood sugar levels countering the effect of high insulin levels and promoting regular ovulation. For some years Metformin was widely used in IVF treatment protocols to restore ovulation, but it has now been shown to be less effective than clomiphene citrate. These days the use of Metformin is restricted to women who are proven to be insulin resistant.

Genetic considerations

Genetic/inherited conditions are passed down through families. They are genetically determined and involve a single gene mutation or a chromosomal abnormality.

Some genetic abnormalities are more common in certain ethnic populations.

Ethnicity	Genetic condition
African	Thalassaemia, Sickle cell disease
Mediterranean	Thalassaemia, Sickle cell disease
Indian, Middle Eastern	G6PD
French Canadian, Cajun	Tay-Sachs disease
Northern/Western European	Cystic Fibrosis

If you think there may be a chance you or your partner may pass on a genetic condition to your baby, or that someone in either you or your partner's family might have had a genetic condition, discuss this with your Fertility Specialist and consider requesting a referral to a genetic counsellor.

Even if you have never known of a genetic illness in your family there is still a risk that you could be carrying a defective gene or chromosome that could affect the health of your baby.

Genetic counselling can form an important part of your preparation for pregnancy.

Typically, genetic counselling aims to:

- establish exactly what the condition is that you are concerned about;
- establish whether you, or your partner, carry the condition. This is usually achieved via plotting a family tree and/or blood testing;
- determine whether or not the condition is transmissible to your baby; and
- inform you (where there is a chance that your baby can inherit the genetic condition) of the genetic condition, the medical consequences of the condition, the risks of your baby inheriting the condition, and what options are available in terms of screening for the condition.

There are a number of prenatal genetic testing options available to assess the health of your baby although there is not one test that provides a 100% guarantee of a healthy baby. Pre-implantation genetic diagnosis (PGD) is an option available to patients undergoing IVF.

PGD tests the embryo prior to implantation. By removing a cell from the developing embryo scientists can test for specific genetic conditions and prevent the transfer of embryos that carry the genetic condition.

After genetic counselling you should ensure that both you and your partner are comfortable with the information that has been provided to you by the genetic counsellor. If you remain unsure of the condition, the risks associated and/or your options moving forward, then request a further consult with the genetic counsellor.

The most important thing is that you feel well enough informed so that you can make the decisions that best suit you and your family.

ovulation and IVF stimulation protocols.

A number of vitamins taken in excess, like vitamin A, can be toxic leading to birth defects, liver disease and bone softening.

If you decide to incorporate alternative treatments to assist you in achieving a pregnancy, it is important to discuss them with your Fertility Specialist.

Alternative treatments

There are a number of "alternative" or "holistic" treatments available that claim to increase fertility and improve the chances of achieving a successful pregnancy.

There are very few scientific studies that provide reliable evidence that any one particular alternative treatment significantly improves fertility and conception.

While there may be benefits to some alternative treatments, a degree of caution is required as some alternative treatments may be detrimental to achieving a pregnancy.

Some herbal remedies contain substances that can interfere with hormones and hormonal treatments. Phytoestrogens are found in a number of herbal remedies and they can retard follicular development and interfere with

Fertility investigations

Undertaking a thorough investigation into your reproductive health prior to commencing any fertility treatment is essential. It would be inefficient to commence assisted reproductive technology (ART) treatment without a thorough assessment of the cause. A comprehensive assessment is aimed at identifying any factors that may be preventing you from achieving a pregnancy. Once identified these factors may often be treated, allowing you to achieve a spontaneous pregnancy, or taken into account when developing specific treatment regimes that lead to the earliest possible pregnancy and reducing the risks inherent with IVF treatments.

For example, without fully assessing the health of your fallopian tubes there is no point starting a course of assisted insemination or ovarian stimulation, as the egg has no way of getting to your uterus for fertilisation. Every cycle of insemination would be doomed to failure. This would delay effective treatment for up to six months and delay your chance of having a baby, wasting time, money and effort. Similarly a laparoscopic assessment may identify undiagnosed endometriosis, that when treated, could allow you to achieve a spontaneous pregnancy, without any further intervention. In fertility treatment there is nothing more important than a thorough assessment.

The aim of this section is to provide you with information about the various investigative procedures associated with IVF, and indicate which investigations are particularly relevant to your personal circumstances.

It explains the various procedures, discusses the possible outcomes and the impact these investigations may have on your efforts to have a baby. Armed with this information you and your partner can discuss the options with your Fertility Specialist. It can also serve as a checklist that you can review in order to be confident that the level of investigation you have had to date is appropriate for your current circumstances.

Hormone levels

The blood tests you had to measure your hormone levels are a commonplace assessment of your reproductive health.

Typically the levels of oestradiol, luteinising hormone (LH), follicle stimulating hormone (FSH), progesterone and thyroid levels are measured. These hormones play an important role in ovulation and pregnancy.

Your **anti-mullerian hormone** (AMH) level is an important fertility assessment that measures your ovarian reserve (the amount of eggs left in your ovaries that can mature and become available for fertilisation). The AMH blood test measures the anti-mullerian hormone that is released by the follicles that contain the eggs waiting to mature. While you were born with approximately 400,000 eggs in your ovaries, this number naturally declines over a lifetime leaving fewer and fewer eggs to mature and be released for ovulation.

Approximately 1,000 eggs are lost to natural attrition every month but the rate of decline is different for every woman so it is important to know just how many you have available. In the past, levels of follicle stimulating hormone (FSH), inhibin and oestradiol were used to gauge ovarian response. However, an AMH is now considered to be the most sensitive assessment and is used to indicate your probable response to the process of ovarian stimulation during IVF treatment.

Your elevated AMH may be attributed to your diagnosis of PCOS. Your response to ovarian stimulating drugs will need to be carefully monitored to avoid the risks of OHSS and the disappointment of cancelled cycles. In order to minimize the risk of overstimulation associated with higher dosages of ovarian stimulants, it is prudent to monitor follicular development early with an estrogen blood test from day 5 or 6 of stimulation, rather than waiting for routine ultrasound and blood tests commonly performed on day 9. This will enable your dose to be reduced early if you are shown to be at risk of developing OHSS. The monitoring and management of ovarian hyperstimulation is outlined in section 5 of this report.

Vaginal swabs

Vaginal and cervical swabs can test for chlamydia, gonorrhoea, ureaplasma,

mycoplasma and genital ureaplasma, and aerobic organisms, all of which can impact on conception and pregnancy.

High vaginal/cervical swabs can be undertaken at the time of your pap smear and should be considered prior to your attempt to achieve a pregnancy, particularly if you have had multiple sexual partners in the past few years.

A urine test for chlamydia and gonorrhoea is also available.

Pelvic ultrasound

The fact that you have had an ultrasound means that your Fertility Specialist has access to valuable information about your reproductive health.

Your pelvic ultrasound will have provided your Fertility Specialist with the ability to:

- Identify any pathological conditions associated with infertility including fibroids, cysts, polyps and other structural abnormalities that may be affecting your fertility.
- Perform an antral follicle count (AFC). An antral follicle count is one of the methods used to measure your ovarian reserve (AMH is the other as discussed earlier, as is FSH levels). The AFC actually counts the antral follicles of the ovaries whereas the AMH measures the level of the hormone released by the follicles. As with an AMH level, the AFC is used as a prediction of your response to ovarian stimulants used in IVF.
- Assess the potential risk of you developing OHSS. A pelvic ultrasound plays a role in the diagnosis of polycystic ovaries. Ovaries that are seen to have a higher number of antral follicles (in the absence of ovarian stimulating drugs) are associated with a higher risk of OHSS. Knowing this from the outset assists your treating Fertility Specialist to develop a treatment regime and dose that aims to minimise the risk of you experiencing OHSS.

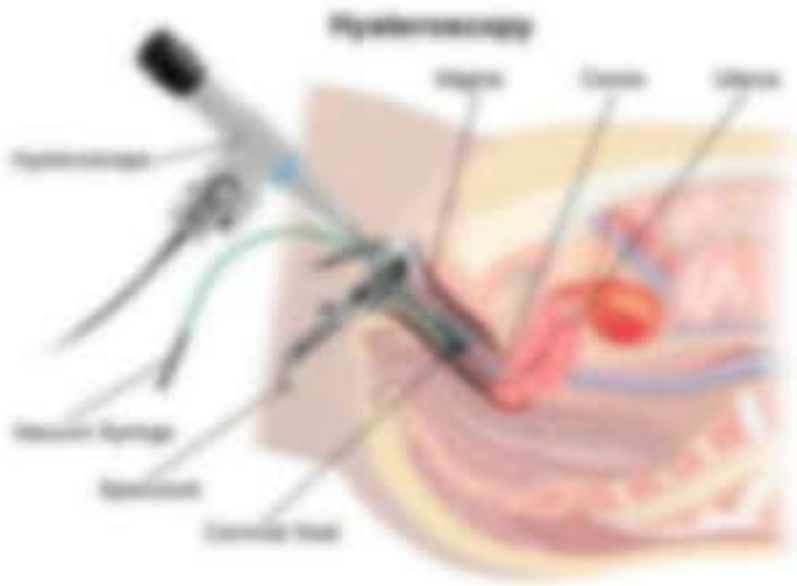
This provides invaluable information regarding potential treatment options available to you and your partner.

A sonohysterogram may be undertaken at the time of your pelvic ultrasound in an attempt to assess the health of your fallopian tubes. The sonohysterogram is no longer considered the assessment of choice, as there are better ways of visualising and assessing your fallopian tubes. These are discussed later in your report.

Hysteroscopy

A hysteroscopy is one of two key procedures that allows for direct visualisation and assessment of your reproductive organs (a laparoscopy is the other and is discussed later in this report). A hysteroscopy uses a small telescope that is inserted up through the vagina and the cervix to look directly into your uterus.

This procedure allows your treating Fertility Specialist to assess the uterine lining and identify conditions such as polyps, fibroids and other structural abnormalities that can interfere with embryo implantation and/or fetal development. Often such structural abnormalities can be treated allowing pregnancy to occur.



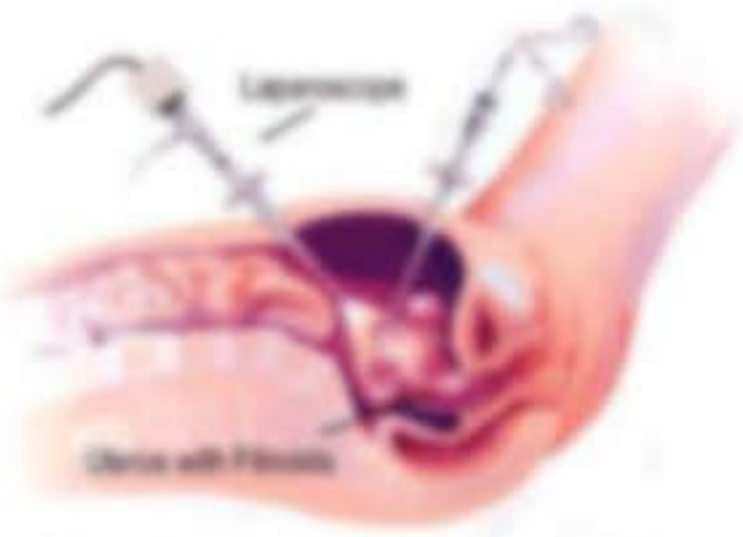
A hysteroscopy is often recommended when a pregnancy is not achieved after two or three cycles of IVF treatment, as there may well be a uterine factor that is contributing to your inability to successfully achieve a pregnancy. A hysteroscopy is often performed in conjunction with a laparoscopy in order to undertake a complete assessment and review of your reproductive organs.

Laparoscopy

A laparoscopy allows for a direct visual assessment of the ovaries, fallopian tubes, uterus and pelvic wall. It aims to identify any signs of disease or

malformation, assesses the health and patency of the fallopian tubes and looks for any evidence of endometriosis. A laparoscopy is considered to be the gold standard of fallopian tube and pelvic assessment.

During a laparoscopy, a 5 to 10 mm telescope is inserted through a small incision in your abdomen. It allows the specialist to visualize your reproductive organs and determine if there is anything that is affecting your ability to conceive and carry a baby. A laparoscopy is the most invasive assessment procedure associated with fertility investigation and it carries with it the inherent risks of general anesthesia and surgery.



"Illustration of laparoscope undertaking direct visual assessment of reproductive organs".

The issue of who should have a laparoscopy and when it should be performed is a highly contested issue among Fertility Specialists.

Many Fertility Specialists advocate a conservative approach to fertility investigations, particularly when a review of your obstetric and gynecological history has shown no immediate indication for a laparoscopic assessment. This approach involves the commencement of fertility treatments and the use of less invasive and less expensive investigative procedures from the outset, progressing to laparoscopic investigation should early fertility treatments prove unsuccessful. It is argued that this approach provides for the opportunity of achieving a successful pregnancy without incurring the discomfort, risk and costs associated with such an invasive procedure so early in your treatment.

On the other hand, advocates of early laparoscopic investigation tend to argue that a laparoscopy provides a comprehensive assessment that may identify any number of issues that may be impacting your fertility. In this way, these issues can be identified early and where possible treated. This may increase your opportunity to achieve a pregnancy from the outset. This approach may avoid the disappointment of failed attempts and the loss of time, money and opportunity associated with a more conservative approach.

While there are no clear guidelines, there are a number of situations where an early laparoscopy may be considered to be appropriate. Women about to commence ovulation induction (OI) and inter-uterine insemination (IUI) can undergo an early laparoscopic assessment to ensure they have patent (open) fallopian tubes as blocked tubes would render OI and IUI ineffective.

Women with a history of endometriosis or symptoms of endometriosis may also consider undergoing early laparoscopic assessment to ensure that any active disease potentially impeding a successful pregnancy is removed. Laparoscopic assessment is also considered appropriate after a number of failed IVF cycles.

It is important for you and your partner to consider your options, discuss them with your Fertility Specialist, and pursue a course of investigations and treatments that you feel confident and comfortable with.

Laparoscopic assessment should include a general assessment of your pelvic organs (looking for any signs of disease or malformation), an assessment of the health and patency of your fallopian tubes and search for any evidence of endometriosis.

One of the key objectives of a laparoscopy is to determine whether or not you have active endometriosis. It is not entirely understood how endometriosis causes infertility, however studies now suggest that 30 to 50% of patients with endometriosis will suffer with infertility. Endometriosis occurs when endometrial tissue grows outside of the uterus.

Endometriosis is commonly found in and around the pelvic cavity, on the ovaries, fallopian tubes and on the pelvic wall. While endometriosis is often associated with painful menstrual cycles, ovulatory pain and chronic pelvic pain, it can be a silent disease meaning that you can have endometriosis and not suffer any obvious symptoms.

Effective treatment of endometriosis involves the destruction or removal of the disease via laparoscopy. If you elect to have a laparoscopy, it is highly recommended that you discuss with the specialist performing your laparoscopy the option of treating any disease that may be found at the time of your initial laparoscopy. This prevents you from having to undergo a second procedure should endometriosis be diagnosed but not treated. Any tissue suspected of being endometriosis should be sent to a pathologist for confirmation.

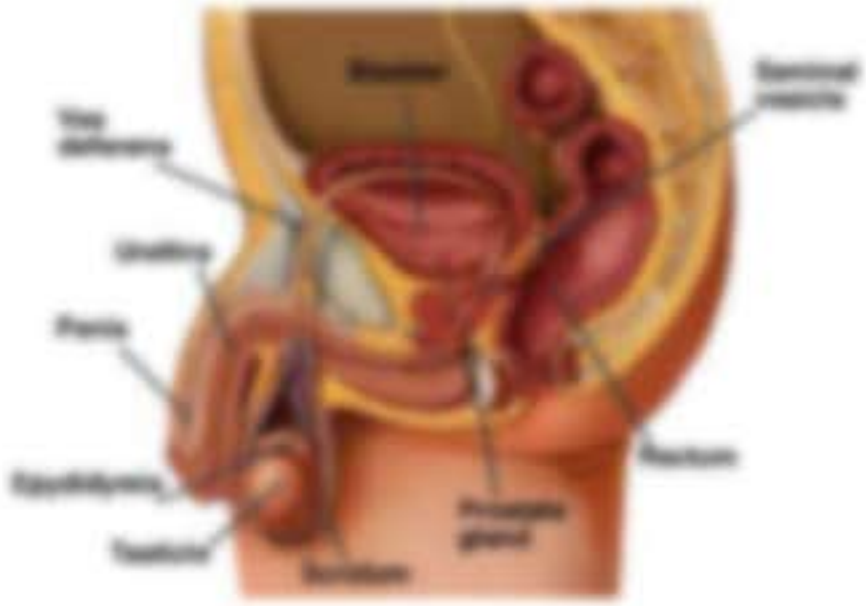
A repeat laparoscopy may be considered appropriate after 2 to 3 failed IVF cycles. You may want to consider and discuss the option of a laparoscopic review with your Fertility Specialist.

Male reproductive health

One of the earliest assessments you face as a couple pursuing IVF is the assessment of the male participant's fertility status (by way of a semen/sperm analysis). The following section of your report talks to the male participant and reviews a number of lifestyle factors that can affect male fertility and discusses sperm/semen analysis. It discusses current treatment options and investigations in light of the investigations you have had to date.

During intercourse there are usually two to three hundred million sperm ejaculated into the vagina, a few hundred thousand will pass through the cervix, a few thousand progress to the fallopian tube and a few hundred will reach the egg. Only one will fertilise it.

In order for fertilisation to have a chance, there needs to be a large enough volume of healthy sperm ejaculated and the sperm needs to be capable of swimming the distance to the egg. In addition, the sperm needs to be resilient to antibodies that may impede their progress along the way and the sperm needs to be able to fertilise the egg once it reaches it.



Sperm production occurs in the seminiferous tubules of the testes, at a rate of approximately 12 billion sperm a month. Once created the immature sperm travel to the epididymis where they mature and are stored. It takes approximately 70 days for sperm to develop and move into the epididymis.

During penile stimulation (and before ejaculation) stored sperm is propelled through the vas deferens and into the ejaculatory ducts where it mixes with seminal fluid from the seminal vesicles. The fluid provides the sperm with energy to swim and protects it from the acidic environment of the vagina and uterus.

At the point of ejaculation the fluid is expelled from the ejaculatory ducts toward the urethra. It passes through the prostate gland where prostatic fluid is added to form the semen that is ejaculated.

The average volume of semen ejaculated is usually between 1 to 4 mls, with each ml containing approximately 50 million sperm.

The following hormones control sperm production:

Gonadotrophin releasing hormone (GnRH) is released by the hypothalamus within the brain. GnRH is responsible for the production and release of both LH and FSH.

Luteinizing hormone (LH) is produced in the pituitary gland at the base of the brain and stimulates testosterone production within the testes.

Follicle stimulating hormone (FSH) stimulates the growth of sperm and is essential to spermatogenesis.

Testosterone is produced by the Leydig cells within the testes and is essential for sperm production.

Both FSH and LH are required in the production and maturation of the spermatozoa.

Male factor infertility accounts for nearly 30% of all infertility cases. While it is important for males to be investigated for infertility there are very few causes of

male infertility that can actually be treated to improve sperm numbers and quality.

In the past there was little that could be done to overcome male infertility and many couples had to opt for the use of sperm donors. Fortunately with the advent of IVF in the 1980's, the development of intracytoplasmic sperm injection (ICSI) and the use of testicular biopsy, there are now very few men who cannot attempt IVF using their own sperm.

IVF techniques can now overcome a significant number of male fertility issues by collecting, selecting and presenting sperm to fertilize the egg in order for you to father a child.

There are number of potential causes of male infertility.

Poor semen production. Poor spermatogenesis accounts for up to 60% of all male infertility. The cause of poor spermatogenesis is largely unexplained although the use of illicit drugs, excessive amounts of alcohol and use of anabolic steroids are known causes of poor spermatogenesis. It also occurs after Cisplatinay Therapy (CHT) or chemotherapy.

Poor spermatogenesis can result in the total absence of sperm in the semen (azoospermia), a reduced number of sperm in the semen, decreased sperm motility (where the sperm are unable to swim properly) or an increase in unusually shaped sperm. Given that the causes of poor spermatogenesis is largely unknown, poor spermatogenesis is largely unavoidable.

Obstruction of the ducts can impede the progress of sperm through the male reproductive tract, preventing the delivery of a large enough volume of ejaculate into the vagina.

Obstructions may be partial or complete and may be the result of epididymal scarring, (after a sexually transmitted disease), congenital malformations, prostatic cysts or (most commonly) as a result of a vasectomy.

Disorders of the accessory glands. The accessory sex glands include the seminal vesicles, the prostate gland and the bulbo-urethral gland all of which contribute to the ejaculate. Infection within these glands can result in abnormal semen production.

Ejaculation disorders. Failure to ejaculate, or ejaculate effectively, prevents the delivery of semen. Ejaculatory disorders may be due to altered anatomy (where the opening of the urethra is somewhere other than the tip of the penis), retrograde ejaculation (where the ejaculate is propelled back up the urethra into the bladder, rather than out the distal end of the urethra) or erectile dysfunction (the inability to obtain or maintain an erection).

Sperm antibodies can sometimes be found in semen, and if present can immobilize or destroy sperm preventing them from progressing along the female reproductive passages and reaching and fertilizing the egg.

Hormonal deficiencies. While rare, hormonal imbalances can affect sperm production. Hormonal imbalances may result from the pituitary or hypothalamus gland failing to produce and regulate male reproductive hormones. Hormonal deficiency can also be associated with the use of some medications including anabolic steroids.

Age considerations

The fertility of both men and women declines with age. Unlike women (who are born with all their eggs), men do not rely on a single stock of sperm. In fact, men don't even start producing sperm until they reach puberty.

There are a number of studies that suggest sperm from men over the age of 40 is associated with an increased risk of chromosomal abnormalities. As indicated in section one, decreasing fertility associated with the ageing process can significantly impact on your chances of having a baby. While this is more relevant for women, it has now also been shown to be true for men. Your ability to produce healthy sperm is reflected in your sperm analysis.

Male Body mass index

Your Body Mass Index (BMI) is 25.05 and this is considered to be too high. There is now evidence that indicates that as a male's BMI increases his reproductive function decreases. Issues of oligozoospermia (low sperm count) and asthenozoospermia (low sperm motility) increase with a rising BMI, as does the likelihood of increased sperm DNA damage. Sperm DNA damage is linked to decreasing fertilization rates and an increased risk of miscarriage.

Obesity has also been linked to reduced testosterone levels. Recent research has indicated that a diet with a high total fat intake can also be linked to reduced sperm counts. Another dietary factor is alcohol consumption. Excessive alcohol consumption can affect spermatogenesis (production of sperm) in both the long and short term. High alcohol consumption can also lead to a decreased liver function, which can cause a rise in male estrogen levels. This can interfere with sperm development and the hormonal control of sperm production. Prolonged alcohol consumption can also cause long-term damage to the cells that are responsible for generating sperm.

Semen analysis

There are international guidelines for semen analysis which are set out by the World Health Organization (WHO).

WHO ranges for semen analysis (2010)	
Volume	> 1.5ml
pH	7.2 - 8.8
Sperm concentration	> 15 million spermatozoa / ml
Motility	>40% motile within 60 minutes of ejaculation
White Blood Cells	< 1 million / ml
Sperm antibodies	< 50% motile spermatozoa with binding
Sperm morphology	> 4% normal shapes

It is important to know that a single abnormal semen analysis does not mean you have abnormal sperm or male factor infertility. A semen analysis that shows an abnormal result should be repeated, as there are a variety of factors that can affect your results in the short term. Poor collection and storage of the sample, delayed analysis of the sample, and the failure to abstain (don't) to the sample can affect your results.

Even a febrile illness (which causes high temperatures) in the 3 months prior to the sample being taken, can negatively impact the results. Because the life cycle of sperm maturation is around 3 months any temporary impairment of sperm production may show up for that period of time.

Sperm motility above 40% is considered normal and indicates that your sperm is capable of moving forward at a satisfactory speed.

Hormone levels

The primary assessment of male infertility is semen analysis. Blood tests are generally used to investigate issues identified as a result of the semen analysis. However, disturbances in the **thyroid function** can affect spermatogenesis and male fertility. Both hypo (low) and hyper (high) thyroidism affects male fertility by interfering with hormone levels of testosterone, LH and FSH, which are required for the production of healthy sperm. It is important to identify any thyroid dysfunction and correct it. Normalising thyroid levels may restore healthy sperm production.

The fact that you have a low sperm count despite a normal **testosterone** level may seem unusual but the reason for this is that the hormone testosterone is produced in a separate part of the testes (Leydig cells) to where the sperm is produced (in the seminiferous tubules). So it is possible to have a low sperm count and a normal testosterone level.

Treatment and treatment options

Because IVF is so emotive, it can place a great deal of stress on you and your family. It is understandable that you want to try anything and everything in order to succeed in achieving a pregnancy and having a baby. However, this sometimes needs to be weighed up against the emotional and financial cost of ongoing IVF treatments.

While IVF pregnancy rates have improved there is no single, guaranteed solution to achieving a pregnancy with IVF. Current IVF pregnancy rates sit at around 30% per cycle, with pregnancy rates being highly dependent on your age and your personal circumstances.

The science of IVF is relatively young, with the world's first IVF baby being born in 1978. Since then there has been a great deal of research and development that has improved nearly every aspect of assisted reproductive treatments.

While many of the assisted reproductive technology (ART) treatments and techniques developed have improved outcomes, some of these treatments have not been shown to be beneficial and they may remain as someone's suggestion that they 'might' work.

As an IVF/ART consumer, you will be faced with a number of treatment options to consider. In order for you to make an informed decision, you need reliable and up to date information about each treatment option.

In medicine today, best practice is the use of 'evidence based medicine'. What this means is that a particular treatment has been shown to be, without doubt, more effective than an alternative treatment or no treatment at all.

Evidence based medicine relies on scientific trials and research reviews to provide evidence that a treatment technique is effective and, in the case of IVF, results in the increase of healthy pregnancies and an increase in babies being born.

This is most commonly undertaken through 'prospective controlled trials' where two treatments are controlled in similar patients under matching conditions. Ideally the patients are 'randomized' into each arm of the study (a randomized controlled trial). By comparing the two treatment outcomes scientists and specialists can see which of the treatment techniques is proven to be more effective than another.

Another method is to review a number of similar studies and analyze the combined results in order to reach a conclusion.

This section of your report outlines current fertility treatment options and discusses treatment options that are based on evidence based medicine and best practice guidelines. This should provide you with information that you can discuss with your Fertility Specialist to actively participate in treatment decisions that best suit you and your family.

IVF hormone therapy

The aim of IVF hormone therapy is:

- To stimulate the ovary to produce an increased number of mature follicles that will provide eggs for collection (controlled ovarian hyperstimulation);
- To prevent ovulation from occurring to ensure that the eggs are available for collection (suppression of ovulation);
- To trigger final maturation of the eggs to ensure the eggs are ready for collection (final maturation and trigger); and
- To provide the necessary hormonal support in order to prepare the uterus to receive and nurture the embryo upon transfer (luteal support).

The **4 key elements** of IVF hormone therapy involve:

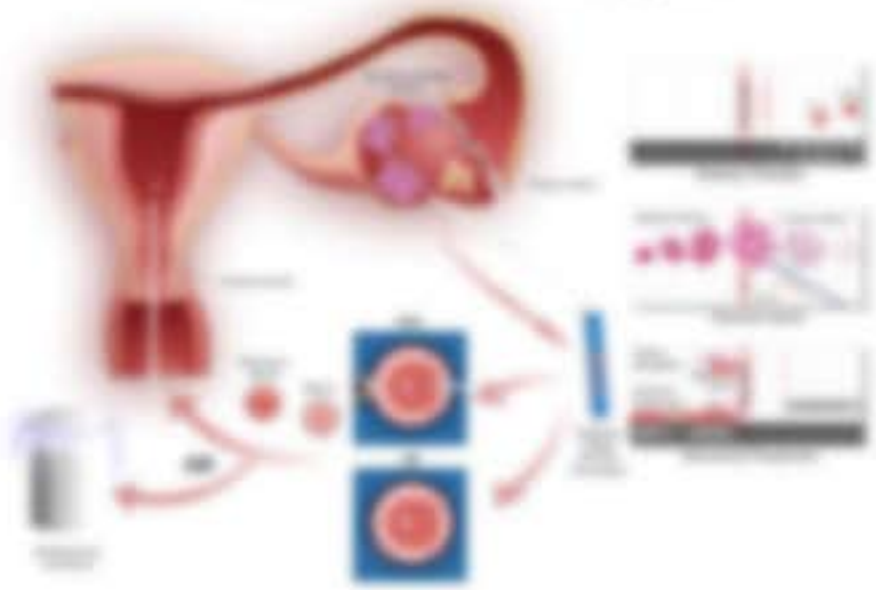
- **Follicle stimulation.** The stimulation of the follicles via the use of ovarian stimulating hormones (with a form of follicle stimulating hormone);
- **Ovulation suppression.** The inhibition of ovulation until follicles are mature (with GnRH agonist or antagonist hormones);
- **Final maturation and trigger.** The triggering of ovulation (with HCG); and
- **Luteal support.** The provision of luteal support (using HCG injections or progesterone supplements).

The choice, combination, dose and timing of IVF hormone therapy is extremely complex and is an area that is constantly being researched. The goal of an IVF stimulation regime is to produce the optimal number of mature eggs that will develop into high quality embryos for embryo transfer/freezing, while avoiding the complications of ovarian hyperstimulation syndrome (OHSS), multiple pregnancy and the disappointment (and cost) of cancelled cycles. This is best achieved by:

- the selection of a stimulation protocol that is appropriate for your individual circumstances,
- the careful monitoring of your response to the protocol,
- adjusting the protocol as required, and
- ensuring appropriate timing of your trigger.

We have attached a large copy of the following illustration in section 6 of this report which may be easier to read.

Stimulated IVF/ICSI Cycle



The first element - follicle stimulation.

Ovarian stimulating hormones (also known as ovulation induction hormones) are an integral part of your IVF treatment. They are used to assist your ovaries to increase the number of follicles (and eggs) that develop during your cycle, rather than just developing a single follicle. They seek to mimic the function of your own follicle-stimulating hormone (FSH), which is secreted from your pituitary gland in the early part of your ovarian cycle.

There are two forms of injectable ovarian stimulating hormones. Both are forms of follicle-stimulating hormone (FSH). Newer hormones (known as recombinant FSH) such as Gonal F, Puregon and Elonva, are all synthetic forms of FSH. Drugs like Follistim, Fostimon and Menagon are highly refined forms of natural FSH known as urinary drugs.

Both types of FSH act directly on your ovaries to stimulate follicle growth and development. Current evidence suggests that there is no difference in effectiveness of the two types of FSH but recombinant FSH preparations are more expensive than the urinary FSH alternative.

Recently a new long acting recombinant FSH (Elonva) has been introduced to the market. Elonva has the distinct advantage of being a single injection that works for seven days, rather than a daily injection, and the dosing is simple as it is based on your weight.

There are several variables that will dictate the number of eggs retrieved. One of the most significant variables is your FSH dose. Other variables include your age, BMI, your ovarian reserve, the presence of endometriosis, and your IVF hormone protocol. The goal of FSH treatment is to produce 3 to 12 quality eggs for collection. Less than 3 eggs is described as a poor response. Over stimulating the ovaries and collecting more than 12 eggs puts your welfare at risk (increasing your risk of OHSS).

A persistently low egg count at the time of collection can be disappointing.

Women who have low egg counts at the time of collection generally do so because they are responding poorly to the stimulation protocols currently available. In fact this group of women is collectively known as the "poor

responders' group. There is a great deal of research that is dedicated to developing techniques that will improve egg development in poor responders.

At this stage the current treatment options are to:

- Consider incremental increases in your FSH dose (this must be undertaken in consultation with your Fertility Specialist).
- Consider changing your agonist / antagonist protocol (e.g. antagonists, boost/flare regime or using Clomid), and
- The use of DHEA, growth hormone and LH add back have also been used to improve outcomes for "poor responder" (these are discussed in detail later in this report).

The second element - ovulation supression

The suppression of spontaneous ovulation is a critical element in IVF treatment. By preventing ovulation, multiple follicles are able to develop under the influence of FSH and remain available for collection. Without ovulation suppression, the body's natural hormones would trigger spontaneous ovulation (in response to naturally rising estrogen produced by all the follicles). Spontaneous ovulation results in the release of eggs, and once released they cannot be collected.

The process of 'turning off' or 'suppressing' the natural hormones that normally trigger ovulation is known as down regulation. Down regulation can take between 7 to 28 days.

Down regulation is assessed by monitoring for falling estradiol levels in the blood or by ultrasound (evidenced by a thin endometrium and no follicle development). The process of down regulation can occur before or after you start using FSH to stimulate follicle development. It will depend upon which ovulation suppression protocol is used.

There are two types of hormones that can be used in ovulation suppression (down regulation), the GnRH agonists and the GnRH antagonists. Collectively they are called GnRH analogues.

GnRH agonists	GnRH antagonist
Synarel nasal spray	Cetrotide
Lucrin	Cetrotide
Prostap	Cetrotrelix
Zoladex	Orgalutran
	Antagon

GnRH agonists were the first group of hormones used to inhibit spontaneous ovulation in IVF treatment and have been widely used since. GnRH agonists work by first causing the pituitary gland to release all of its stored FSH and LH and then by blocking the pituitary gland from producing any more. Without the production and release of LH spontaneous ovulation cannot occur and ovulation is suppressed.

GnRH antagonists are a more recent ovulation suppressant introduced in the late 1990's. The primary difference is that unlike the GnRH agonist, the GnRH antagonists do not cause the initial release, or 'flare', of FSH and LH. The GnRH antagonists causes an immediate drop in FSH and LH level and this has resulted in a shorter treatment time.

Since the introduction of GnRH antagonists there have been in excess of 200 clinical trials worldwide to establish which treatment protocol results in higher pregnancy rates. The two choices are now agonist or antagonist? To date there is no definitive answer. However, there are now a number of drug treatment protocols that are considered to be standardised and are recognised to be more appropriate for specific clinical circumstances over others.

GnRH antagonists tend to be administered using a 'fixed' regimen or a variable regimen. The fixed regimen requires daily injections that start on day 5 or 6 of the FSH injections and continue right through until just prior to the trigger injection. The variable regimen uses serial ultrasounds to assess follicle growth, when the largest follicle is observed to be 14mm in diameter, daily antagonist injections are commenced. They continue until just prior to the trigger.

GnRH antagonists have now been associated with a relative risk reduction in the incidence of OHSS while maintaining comparable pregnancy rates to agonist protocols. In addition, there tends to be a preference to antagonist cycles, as they require fewer days of medication, and many women report fewer side effects.

The GnRH agonists are used in either a 'long' or a 'short' protocol. Long protocols using GnRH agonists start prior to your period (after your ovulation in the previous cycle). It requires 14 days of agonist treatment prior to the introduction of FSH. The agonist is then continued until just prior to the trigger injection of HCG.

A short agonist protocol requires both GnRH and FSH to begin typically on day 2 or 3 of your cycle.

Of the two agonist protocols, it is believed that the average patient has a higher success rate on the long agonist protocol rather than the short agonist protocol. The disadvantage of the long agonist protocol is that it requires more days on medication.

The aim of any treatment protocol is to minimize the risks and discomfort of the drug treatment while maintaining pregnancy rates.

There is no real way of predicting which protocol will be the best one for you. If you do not achieve a pregnancy after 2 cycles using one particular protocol then a change in protocol could be considered. There are a number of adjuvant treatments that seek to improve pregnancy outcomes, they are outlined in more detail later in the report.

Women with a diagnosis of PCOS/PCOS have a higher risk of OHSS. As such the antagonist protocol could be considered a safer option for you. The use of an antagonist protocol enables you to use an agonist trigger rather than using the hCG trigger (reducing your exposure to LH).

The third element - final maturation and trigger

Before your eggs can be collected they need to go through a final maturation process. This process seeks to mimic the natural process of preparing your ovary, eggs and follicles for ovulation.

A single "trigger" dose of human chorionic gonadotropin (hCG), or a one off dose of a GnRH agonist, is administered between 34 and 36 hours prior to your scheduled egg collection.

The timing of the administration of your trigger is crucial. If your trigger dose is administered too early your eggs will mature and ovulation may occur prior to the time of collection. If this occurs then your eggs are released from the follicles and once released they cannot be retrieved. This means there will be no eggs available for collection.

If your trigger dose is administered too late then your ovary may not be well enough prepared to relinquish the eggs. This can make egg collection more difficult and it can result in fewer eggs being available for collection. It can also result in immature eggs being collected. Immature eggs are less likely to fertilize and develop into embryos.

Ultrasound assessment of your follicle growth allows your Fertility Specialist to visually assess the size of your follicles and time the administration of your trigger and collection accordingly. Usually when two to three follicles at 18mm to 19mm in diameter are seen the ovary is considered ready to be triggered. Follicles which are close to this diameter may also be taken into consideration.

There are two forms of hCG triggers that can be administered, a biological derivative of hCG (i.e. Pregnyl or Profasi) or a recombinant form of hCG (i.e. Ovidrel). At this stage there is no data to indicate if either of these triggers is linked to higher pregnancy rates over the other.

Adjuvants

Along with the 4 key elements of IVF drug treatment outlined, there are a number of other drug therapies that can be incorporated into your IVF treatment protocol in an attempt to improve your chances of success.

These additions are known as adjuvants. Many adjuvant treatments come and go as research either validates them as effective treatments or they are proven to have no demonstrable benefit.

The following section reviews current adjuvant treatments and outlines where they may be of benefit to you.

The use of **supplemental luteinizing hormone** (LH) during the controlled stimulation phase of IVF treatment was an attempt to provide the developing follicles exposure to LH.

During a natural ovarian cycle (a non IVF cycle) once an egg has reached maturity a surge of LH causes estrogen levels to drop and ovulation occurs. The natural surge of LH is thought to have beneficial effects on the egg maturation process. It has been suggested that during an IVF cycle the suppression of LH denies the egg access to this component of the maturation process.

It was thought that the suppression of LH (particularly in GnRH antagonist protocols) and the use of recombinant FSH (which contains no LH) may be a reason why some women's eggs did not develop as expected.

Studies have now concluded that LH supplementation does not generally provide any substantial improvement in pregnancy rates for the majority of women undergoing IVF, regardless of whether an antagonist or agonist protocol is used.

However, women over the age of 35 who have responded poorly to FSH (resulting in low numbers of eggs at collection) may derive some benefit from this treatment.

Given that recombinant LH (rLH) can be quite expensive, a less expensive way of achieving the same biochemical effect is to administer small doses of hCG during the stimulation phase.

DHEA is a drug that has gained recent popularity in IVF treatment regimes particularly for women with a diminished ovarian reserve. A recent study has suggested that for women with low ovarian reserve, DHEA supplementation results in an increase in the number of eggs available for collection and an improvement in egg quality. This in turn increases embryo numbers and pregnancy rates. It has also been suggested that DHEA supplementation reduces chromosomal abnormalities, which in turn reduces the incidences of early pregnancy loss (miscarriage).

Current treatment regimes vary given that the adoption of DHEA is in its infancy. The current suggested treatment regime is supplementation with DHEA for at least 8 weeks prior to an IVF cycle starting. DHEA treatment then

continues through to the second positive pregnancy test.

Side effects of DHEA are reportedly uncommon and include temporary hair loss, acne and oily skin during its use. DHEA is a male hormone and there is some concern about continuing the administration of a male hormone when pregnant with a female fetus. For this reason DHEA administration is stopped in early pregnancy prior to the time that the embryo's organs develop.

There is a weakness in the current DHEA evidence because it has all been based out of one fertility center in the USA and other centers have not yet been able reproduce their promising results. No more research is undertaken the effect of pre treatment with DHEA will become clearer.

DHEA treatment should not be commenced without consulting your Fertility Specialist.

The use of **growth hormone** (GH) as an IVF adjuvant is a relatively new form of treatment and its efficacy is still being studied.

There is a small amount of evidence that may give some confidence that GH treatment for women undergoing IVF / ICSI treatment results in higher birth rates in women who have responded poorly to stimulation protocols.

Growth hormone is thought to promote egg development and maturation in women who have produced less than 6 eggs despite optimal stimulation. A large study (the LEAP study) is currently underway in Australia and the results will provide a greater understanding of the efficacy of the treatment.

The fourth element - luteal support

Luteal support is the 4th element of IVF hormone treatment. The process of IVF stimulation regimes using agonists and antagonists alter the natural function of the pituitary gland and this can lead to impaired production of progesterone by the corpus luteum. Progesterone is necessary for endometrial development, which is required for the implantation of embryos. By providing extra luteal support the uterine lining can prepare itself as it would in a natural cycle.

Luteal support is usually commenced on the day of, or the day after, egg collection and its purpose is to prepare and maintain the uterine lining for embryo implantation. There is wide consensus that some form of support should be used for uterine preparation leading up to embryo transfer.

Initially hCG was administered to provide luteal support, however, given that hCG can precipitate or aggravate OHSS, progesterone is now more commonly used. Progesterone preparations are administered via a pessary, gel or injection. Progesterones directly stimulate the lining of the uterus preparing it for embryo transfer (oral progestogens are not effective and are not used).

Luteal support is aimed at optimizing the uterine environment in order to support the implantation and growth of your embryo and reduce the incidence of embryo loss after transfer.

Embryo transfer

The **day of embryo transfer** is a subject of considerable research focus.

On the day of egg collection your eggs are fertilized and the development of your embryos is carefully monitored.

Immediately after successful fertilization (day 1) the developing embryo has 2 pronuclei, each one containing the chromosomal material from each of the genetic parents. Early embryonic development requires these cells to divide continuously until the cells organize themselves into two distinct groups (on day 3).

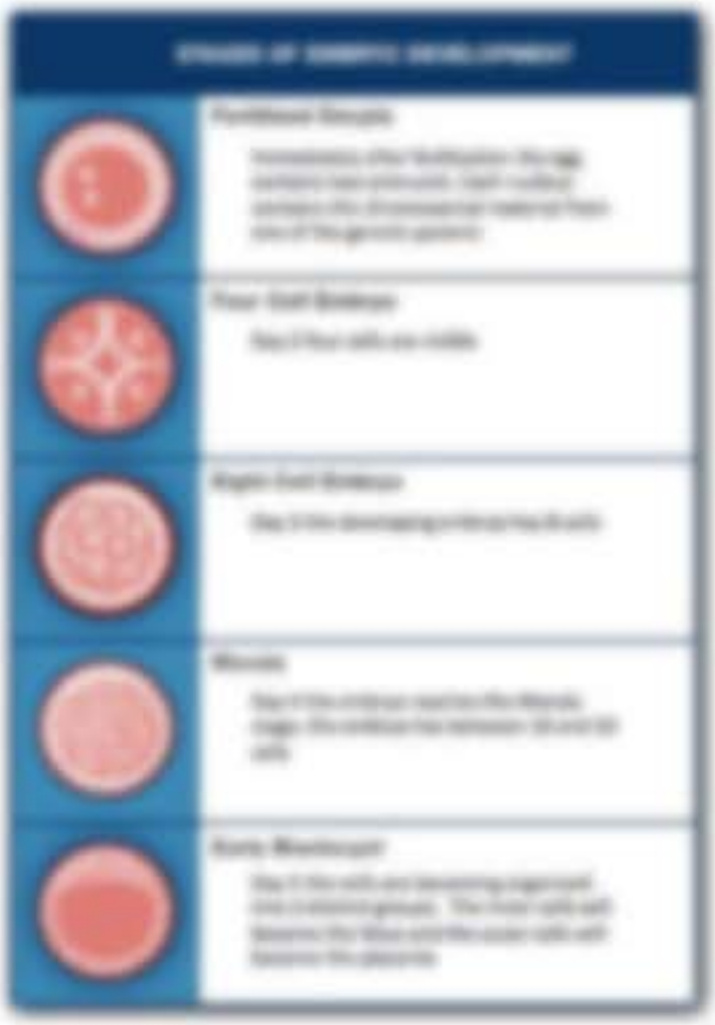
On day 2, 2 to 4 cells are visible. On day 3, the developing embryo is at the cell stage and has around 6 to 8 cells. On day 4, the embryo has reached the morula stage and the cells are compacted together and cannot be counted. On day 5, the embryo has reached the blastocyst stage and the cells are organized into two groups. One group will develop into the fetus and the other into the placenta.

In a spontaneous pregnancy, the early embryonic development usually occurs as the fertilized egg travels down through the fallopian tube towards the uterus where is tends to implant on day 5 to 10.

In IVF / ICSI, the process of early embryonic development takes place in the laboratory. Embryonic growth requires a great deal of care and attention. Developing embryos need a stable well resolated environment in which to grow.

In the laboratory embryos are kept in shallow dishes, which contain a culture medium. This medium provides all the nutrients the developing embryos need to grow. Embryos are stored in carbon dioxide (CO2) incubators, which control the environmental temperature and air mix.

In the past, embryos could not develop beyond day 3 in the laboratory and embryos needed to be transferred on day 2 or 3. Following a number of advancements, embryologists are now able to support developing embryos up to the day 5 or 6 blastocyst stage. This means it is now possible to transfer embryos at the cleavage stage (day 2 or 3) or the blastocyst stage (day 5 or 6).



Research has now shown that blastocyst transfers are associated with higher pregnancy rates per transfer and with lower pregnancy losses. The reasons suggested for this is that embryos that have reached the blastocyst stage in vitro have already proven themselves to some degree. The more developed the embryo the easier it is for the embryologist to assess and select embryos that are considered "best for transfer"

Studies have shown that embryos selected as the "best for transfer" at day 2 or 3 do not necessarily progress to become the best day 5 or 6 blastocyst for transfer at day 5 or 6.

There is a risk of waiting for the blastocyst stage to transfer as sometimes none of the embryos reach this stage and transfer may have to be cancelled. Conventional thinking is that if the embryo does not develop to blastocyst in the laboratory, it would have never implanted and resulted in pregnancy.

You need to be confident that the laboratory can support blastocyst growth. In circumstances when only a small number of embryos are available it may be safer to transfer the best embryo on day 3 to mitigate the risk of not transferring an embryo at all. It has been demonstrated that when laboratory conditions are not ideal, it is more appropriate to place the embryos into the uterus sooner rather than later.

The **number of embryos transferred** is a complex decision.

Recent advances in IVF have led to much higher implantation rates. There is now a global move to reduce multiple pregnancy associated with fertility treatments by introducing a single embryo transfer (SET) strategy. A number of countries now regulate the number of embryos that can be transferred.

In the past, the goal of fertility treatment was to achieve a pregnancy irrespective of the number of babies that resulted from the treatment. Today the goal of treatment is a healthy mother and a single healthy term baby.

It is important to balance the time and chances of becoming pregnant against the risk of treatment resulting in multiple pregnancy. While the idea of parenting twins, triplets (or more) may be appealing there are real risks associated with multiple pregnancy for both the mother and babies.

Twin pregnancies have four times the risk of cerebral palsy (twice the risk for each baby). Triplets have ten times the risk (three times the risk for each baby). Multiple pregnancy has a high incidence of premature delivery. Babies born prematurely can have some real challenges and can suffer with both long and short term health issues.

A retrospective study of over 34,000 transfers of one or two embryos in women aged under 40 showed there was a significantly higher rate of healthy baby born per transfer using selective single embryo transfer than when using selected double embryo transfers, regardless of the stage of embryo development. When you allow for pregnancies from the extra embryos frozen, the most effective method is to transfer one embryo at a time.

It is generally recommended that women under the age of 40 have one embryo transferred at a time. Careful consideration of the risk of multiple pregnancy should be given prior to implanting two embryos.

The **process of embryo transfer** (ET) has been shown to affect successful outcomes.

Embryo transfer is the culmination of a long and often arduous journey. It is important to get it right in order to optimise your chances of success.

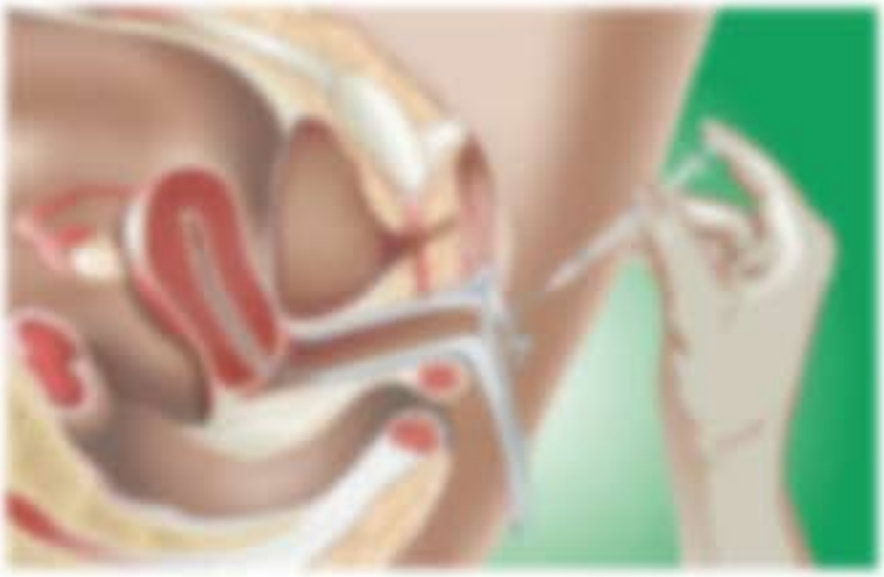
The moment of embryo transfer is an extremely delicate procedure and multiple studies suggest that the overall ease of ET is strongly correlated with successful IVF outcomes and traumatic transfers are associated with lower pregnancy rates. It has been suggested that a difficult transfer resulting in some level of endometrial or uterine trauma, can have a negative impact on implantation success. Contact between the transfer catheter and the fundus of the uterus, or damage to the endometrium, can result in an inflammatory response that creates a hostile uterine environment preventing implantation.

The process of undertaking a "mock" or trial embryo transfer is a method used to improve ET outcomes. The mock or trial transfer aims to identify any potential issues that may impact the ET and ensures that they are dealt with prior to the actual transfer. It has been shown that mock or trial ET significantly improves pregnancy rates. However, with the routine use of ultrasound monitoring of ET it has become less important.

Ultrasound guidance of embryo transfer is another means of improving the efficiency by allowing for the precise placement of the embryo/s in the uterus

and minimising the risk of the transfer catheter coming into contact with the uterine walls. While studies on the effectiveness of ultrasound guided transfers are not yet conclusive the data supports ultrasound guided ET as a means to improve IVF success rates.

ET is the culmination of a long and often arduous journey and it is important to get it right in order to optimize your chances of success.



Embryos that are going to be transferred are suspended in a small amount of medium. The medium and the eggs are drawn up into a long thin catheter (the transfer catheter). The woman lies on her back and a speculum is inserted into the vagina. The transfer catheter is then inserted into the vagina, through the cervix and up into the uterus. Once in the uterus the fluid containing the embryos is deposited and embryo transfer is complete. The entire process usually takes around 10 to 20 minutes.

At present the most common process used to **select embryos** for transfer is based on a visual assessment undertaken by the embryologist. Embryologists assess embryos for a number of cellular attributes that are considered to be indicative of a healthy embryo with a high development potential.

Pre-genetic screening (PGS) is another more invasive method, that can be used to assist in the selection of embryos for transfer. PGS requires the early stage embryos to undergo a biopsy and have some cells removed so a genetic study can be performed. PGS seeks to identify embryos that are affected by chromosomal disorders that lead to early pregnancy loss. If identified, transfer of affected embryos can be avoided, thereby improving pregnancy outcomes.

PGD (or aneuploidy screening) is similar to PGS (Pre-Genetic Diagnosis) in as much as it uses the same technology. However, PGD looks for specific genetic conditions whereas PGS looks to identify embryos that do not have the correct chromosomal composition and are therefore more likely to result in early pregnancy loss. Cells with the incorrect number of chromosomes are called aneuploid, while those that have the correct number (46 chromosomes) are 'euploid'. Sometimes an egg or a sperm will have an incorrect chromosome profile and this will result in the embryo having an incorrect chromosome profile. Research indicates that nearly half the eggs produced will be abnormal and result in aneuploid embryos. Chromosomal disorders can result from poor cellular division.

The use of PGS to detect aneuploid embryos for the purpose of embryo selection is in its early days of development and the array of chromosomal disorders that they can test for is expanding. There are some risks and issues associated with PGS.

The major concern is that the process of biopsy of early stage embryos can damage normal embryos. There is also the risk of inaccurate results where a normal embryo is assessed as abnormal and vice versa. Not every biopsy yields a result as not all testing procedures assess for all chromosomal disorders. There is also a suggestion that the cell biopsied may not be representative of all cells and that can lead to an inaccurate result.

While these risks may be warranted when looking for an inherited genetic disorder, the bottom line is performing PGS does not make any extra normal embryos, it simply provides you with an opportunity to avoid the transfer of a chromosomally abnormal embryo from the selection of embryos that you have in an attempt to avoid a transfer that is likely to result in a negative pregnancy test or early loss of pregnancy (ELP).

There is no doubt that the ability to select embryos that are seen to be euploid could alter overall pregnancy rates by reducing the number of ELP, associated with chromosomal abnormalities. For this reason, there is a significant amount of research being undertaken in this area.

There are a number of modifications and new techniques currently being researched.

One of the modifications of PGS is a technique that allows for the screening of all chromosomes, using a technique called Comparative Genetic Hybridization. Unfortunately, this is a minor improvement of the current technology and therefore retains many of the limitations listed above.

A very new screening technique, which is just becoming available, is 'SNP' technology. This allows for the analysis of all chromosomes, and is able to establish if the abnormality comes from the sperm or the egg.

There is also research currently underway that is seeking to identify genes that may be associated with successful embryonic implantation. Identifying these genes may allow embryologists to select embryos with a higher implantation potential. This is early work, but research is progressing.

Early pregnancy loss

Unfortunately the early loss of a pregnancy can occur with any pregnancy whether it is the result of a spontaneous pregnancy or a pregnancy achieved through the use of assisted reproduction. In fact, early pregnancy loss occurs in 15% to 20% of all recognised pregnancies. Even in the best IVF units, less than half of the embryos transferred into the uterus actually implant.

Should such an event occur it can be devastating. However, it does show that you are able to achieve pregnancy. The early loss of a pregnancy is most certainly not through any fault of your own and the loss of an IVF pregnancy does not indicate that the treatment was inappropriate. In fact, IVF worked in so far as you were able to achieve a pregnancy and this is a most positive. Knowing that you can actually conceive a baby means that you should be confident in achieving success should you choose to try again.

Remember that early pregnancy loss can occur in any pregnancy and there is no greater risk with IVF. Emotional recovery from the loss of a pregnancy can be incredibly difficult and the support of professional counsellors or psychologists may help you come to terms with your loss.

Although we usually do not know why a pregnancy does not progress there are three likely causes. The most common cause is a result of an abnormality in the embryo, often caused by a chromosomal imbalance. In the instance, it is the chromosomal imbalance that prevents the embryo from developing normally and the pregnancy is unable to progress. Secondly, it is possible that a potentially normal embryo does not have the strength to implant, or finally that the lining of the uterus is not receptive to the embryo developing, preventing the pregnancy from progressing.

There has been a great deal of research that has focused on improving IVF implantation rates in an effort to reduce EPL. As a result of the research a number of treatments that augment the luteal support phase have been proposed.

Given that EPL is relatively common, most specialists do not tend to explore causative factors of EPL until a woman has suffered three EPLs. However, for women who are having difficulty conceiving this is unreasonable, and investigations could be done after one or two EPLs.

Investigations look to see if any of the following conditions are evident:

Anatomical conditions of the uterus. Some malformation, fibroids and polyps can impede implantation. Investigations to identify inter uterine abnormalities are outlined in section 3 of this report.

Infection. It is possible that infections of the uterus may cause an unsuitable environment that will prevent an embryo from implanting. Actually establishing which microorganism is the cause can be problematic. However, cervical swabs and blood test screening for toxoplasma, rubella, cytomegalovirus, herpes and syphilis are recommended after an EPL.

When abnormal organisms are detected, appropriate treatment with antibiotics and anti-virals is indicated. There has been no evidence to suggest that taking a variety of antibiotics "just in case" you have an infection improves pregnancy outcomes and is not recommended as some antibiotics are contraindicated during pregnancy.

Immunological issues. The idea that an overactive immune system may be a causative factor in recurrent EPL is not a new one. However, there has been little research to prove the theory. The role of our immune system is to identify foreign organisms (like bacteria and viruses) and destroy them but sometimes our immune system gets it wrong and attacks healthy tissue, or in the case of pregnancy, an implanting embryo.

The treatment of immune therapy is aimed at modulating the immune response of women, to improve pregnancy outcomes.

A panel of tests screening for increased immunological activity may include the following:

- Antinuclear factor
- Anti thyroid antibodies
- Anti gastric parietal cell antibodies
- Antiphospholipid antibodies and Anti transglutaminase antibodies (associated with coeliac disease)
- Anti-ovarian antibodies, and
- Natural Killer (NK) cell levels – This test is relatively new and is not considered routine. Recent research has linked an increased NK cell count to an increased immune response and current research suggests that an NK cell level has the potential to identify whether you have an over active immune response that may be a contributing to your EPL.

If any of these tests are abnormal (that is the immunological activity is higher than normal), then immunosuppression using steroids may be considered appropriate. However, treatment with steroids without an immunological reason has not been proved to increase pregnancy outcomes.

Increased coagulopathy. It has been suggested that women with blood that tends to clot more than normal (increased coagulopathy) may be more susceptible to failed implantation and EPL.

Screening tests that can be undertaken for an increased tendency for clotting include:

- Protein C and S levels
- Antithrombin
- Lupus anticoagulant
- Anticardiolipins
- Factor V Leyden
- Prothrombin gene mutation
- Fasting homocysteine
- Full blood examination - platelet count

The use of anti-coagulants may be necessary if you are found to have a condition that requires these drugs. However, it is imperative that if anti-coagulants (including aspirin) are used during your IVF treatment that the dose and timing is managed by your treating specialist. Using heparin or clexane without specific indications (for no known reason) is not recommended as these drugs have not been proven to increase the chances of achieving pregnancy and they do have a number of risks associated with them.

Embryo hatching

The process of embryo hatching is a technique developed to improve embryo implantation rates. Embryo hatching involves the thinning of the outer wall of the embryo (called the zona pellucida) in an attempt to make it easier for the embryo to shed its outer shell and attach to the uterine lining at the time of implantation. Assisted hatching uses a variety of techniques (laser, chemical and mechanical) to thin, put a hole in or remove the zona pellucida from around the embryo. Embryo hatching is a controversial procedure and has gained mixed reviews in terms of its efficacy, its cost and the associated risks to the embryo. At this stage there is no evidence to suggest that it improves live birth rates and is not considered a routine IVF procedure.

Currently, the application of assisted hatching is more technologically driven rather than evidence based. In addition, current evidence provides insufficient data to investigate the impact assisted hatching has in relation to embryo damage, in vitro blastocyst development, monozygotic twinning, and congenital and chromosomal abnormalities. From the few studies that have reported on these areas, it would appear that there is higher risk of ectopic pregnancy, congenital or chromosomal anomalies or embryo damage following assisted hatching.

Embryo glue

Several years ago there was a great deal of "hype" around embryo glue but "embryo glue" is quite simply a compound (hyaluronon) that is now found in most transfer media used.

Hyaluronon is actually a naturally occurring substance that can be found in your fallopian tubes and uterus. A number of studies have shown that embryos exposed to media containing hyaluronon have increased implantation rates but it does not have the capacity to "glue" the embryo to the endometrium as its name might suggest.

Embryo freezing

The freezing of embryos not transferred in a fresh cycle is a real bonus. It enables you to have a second chance if the fresh transfer is not successful and you get to avoid the inherent risks associated with egg collection. The technique used to freeze embryos can definitely affect IVF success rates when using frozen embryos.

Originally the technique used for embryo freezing used a slow freezing technique. Vitrification is the new way of freezing embryos and it has a higher success rate of embryo thawing compared to embryos that have been "slow frozen".

Vitrification is the technique that has become standard in most laboratories around the world. It is quicker and is associated with a higher thaw rate, transfer rate and pregnancy rate. Approximately 90% of embryos that have been vitrified will successfully thaw whereas slow freezing results in a successful thaw rate of around 30 to 60%. Given a much higher thaw rate these embryos result in a much higher pregnancy rate per embryo thawed.

Selecting when embryos are frozen is a similar process to selecting what day to embryo transfer. Embryos are rarely frozen on day 1 now.

Although the thaw rate of day 1 embryos is generally high, freezing on day 1 gives no indication of the ability of the embryos you have to successfully divide

and develop into a more advanced embryo. While you may have frozen a higher number of embryos, there is no indication as to which embryos will continue to develop and for this reason your pregnancy rate per embryo transfer will be low.

Allowing your embryos to progress to at least day 3 to 5 will provide the embryologist with a better indication of which embryos are developing and therefore, which embryos will prove to be the best to transfer. Most recent practice is to freeze embryos at the blastocyst stage (day 5 to 6).

Not only have the embryos declared themselves by being able to develop to blastocyst stage, they have also provided the embryologist with a greater opportunity to select the best embryo for transfer. Transfer selection is based on the healthy and normal appearance of the embryo. The appearance of embryos on day 2 to 3 can be deceiving as many will not reach blastocyst stage despite looking normal early in the culture process. Alternatively embryos that may not appear particularly healthy on day 2 to 3 may well prove to be the embryos that are selected on day 5 to 6 for blastocyst transfer. Therefore culturing all embryos to day 5 allows specific selection and a greater pregnancy rate per embryo transfer.

The aim of frozen embryo transfer is to synchronise the embryo transfer with a natural ovarian cycle so that the embryo is transferred into an environment that is ready and able to support it. The method relies on the natural secretion of hormones associated with follicular maturation and ovulation during your natural ovarian cycle.

After monitoring for ovulation, the embryo transfer should occur on the day that is equal to the day your embryos were frozen. E.g.Embryos frozen on day 5 are transferred to the uterus 5 days after you have been confirmed to ovulate.

Irregular menstrual cycles can make monitoring more difficult and throw doubt on the quality of the endometrial maturation. Women with irregular ovarian cycles often require the support of additional hormonal treatment to provide predictability around the time of ovulation and to assist with the development of the endometrium.

Predictability and control of ovulation can be achieved by incorporating ovulation induction drugs such as Clomid and even FSH to your protocol. A trigger injection can also be used to time ovulation exactly, rather than monitoring for LH rise. This requires ultrasound monitoring for follicular development, with the hCG trigger being given when the follicle is 16 to 18 mm in diameter.

In addition, hormonal replacement therapy using estrogen and progesterone can be used to thicken the endometrial lining. The estrogen hormone tends to be administered orally although patches or injections can be used if you do not respond to the standard oral dose.

Endometrial thickness is then measured and if adequate, progesterone is administered to change the endometrium to secretory phase, a state rich in nutrients to prepare for the embryo. If the standard dose of estrogen is not sufficient to cause adequate thickening of the endometrium as measured by ultrasound then the duration of administration may need to be prolonged.

One disappointing frozen cycle is not necessarily predictive of the potential for success using frozen embryos and consideration should be given to continuing to use the frozen embryos prior to re-stimulating. There is some evidence that embryos have a higher chance of success being transferred into a uterus that has not been through a stimulated cycle. If after 2 to 3 cycles of frozen embryo transfers a pregnancy is not achieved then thorough review and reassessment of clinical circumstances is recommended.

Egg and embyro donation

Egg donation is a procedure that is aimed at overcoming ovarian failure. Ovarian failure is generally due to premature menopause that may be a result of disease, chemotherapy treatment, radiation therapy or the surgical removal of ovaries. Egg donation is also an option where a known genetic disease can be passed down through the mother's genetics or may be considered after repeated IVF cycle failures where egg factor is considered to be the primary cause.

Donor eggs may be obtained from a known donor (usually a close friend or a family member) or they may be from an anonymous donor by way of an egg donation program or egg donor agencies.

Prior screening of the donor is highly recommended and there are international guidelines indicating appropriate screening processes. In general, donors should be screened for communicable infections and diseases including syphilis, hepatitis C, HIV, gonorrhea and chlamydia. In addition, genetic screening is advised to rule out the potential for genetic anomalies. Often the donor is required to undertake a psychological assessment in an effort to ensure that they are able to deal with the potential psychological ramifications of egg donation.

Ideally donors should be under the age of 34 given that female fertility is impacted by age.

During a fresh donor egg cycle (where the eggs are collected, fertilized and transferred without cryopreservation) the process of egg collection is no different to the stimulation and retrieval process of standard IVF. The donor undergoes hormonal treatment to down regulate. Follicle growth is stimulated with FSH and a trigger is administered 34 to 36 hours prior to egg collection.

After collection, the eggs are then fertilized with the male recipient's sperm and the resultant embryo is then transferred on the selected day (day 3 or 5). Surplus embryos may be stored and used for later frozen cycles should the fresh cycle be unsuccessful.

At the same time the female recipient is treated with hormones (estrogen and progesterone) to ensure that her cycle is synchronized with that of her donor and that her uterus is prepared and able to receive the embryo upon transfer. Hormonal replacement continues during the first trimester of the pregnancy.

If the donor egg is from an anonymous donor and is cryopreserved, the embryo transfer occurs after the recipient's endometrium has been prepared with hormone replacement therapy. The endometrium is often monitored via ultrasound to ensure its readiness. As with a fresh transfer, hormonal replacement therapy continues after embryo transfer through the first trimester.

The process of egg donation is a complex procedure and there are many social, emotional and legal considerations.

Professional advice should be sought prior to undertaking egg donor IVF. In the case of a known donor, both the donor and the recipient should undertake legal and psychological counsel.

Embryo donation is considerably less common than egg or sperm donation. As with egg or sperm donation pre-screening of donors is considered mandatory. Embryo transfer is undertaken in the same manner as a frozen IVF cycle in as much as the recipient's endometrium is prepared with hormonal replacement therapy to ensure that the endometrium is prepared and able to receive and support the embryo upon transfer. Embryo donation can be fraught with legal concerns and all participants should consult with legal counsel regarding the necessity of pre-donation agreements and the legal standpoint of parentage.

Conclusion

We remind you that each section of the report has been created in response to the answers you selected throughout your assessment. All of the information provided is relevant to you and includes any additional information you may have requested.

Where additional information has been provided, you may find on occasion that certain information is repeated. This is because sometimes the repeated information is necessary to fully explain an additional topic.

Each section of the report provides information specifically designed to support your understanding of each topic and how it relates to you and your current circumstances.

The report is designed to provide information you can use right now in achieving a pregnancy. It can also be used as a reference document should you choose to pursue assisted reproductive technology or alternative treatment options.

Your report is designed for you alone

You should be aware that your particular report is designed for you and your partner alone.

Your report is so unique that it is highly unlikely that any two people anywhere will receive the same report.

Therefore you should be aware that the report cannot be effectively utilised by another person without having a detrimental effect on their own chances of achieving a successful pregnancy.

What to do next?

In order to fully benefit from this personal collection of information, you should:

1. Read your report in detail. You may benefit from reading the report several times. Take your time to ensure you are familiar with all of the information contained in the report.

2. In each section of the report, identify specific areas of interest or concern you may have. By familiarising yourself with the concepts and information, you should be able to discuss your circumstances with your doctor or treating specialist and be prepared to participate in treatment decisions.

3. Discuss specific areas of interest or concern with your doctor or treating specialist. Ask them to address your areas of concern, and

4. Regularly visit the IVF 4U member library to access latest research and publications. The library provides information to support your pursuit of a healthy pregnancy.

If you find something you want to learn more about, please let us know.

The IVF 4U team wishes you every success in your fertility journey.

The IVF4U editorial board

IVF4U is the best and latest source of independent unbiased advice regarding the latest thinking and practice in the area of fertility treatment and reproductive health.

Our world class international Editorial Board is responsible for ensuring that the information provided through IVF4U's interactive online service is the very best and latest evidence based fertility treatment research in the world.

PROFESSOR GAB KOVACS AM
Chairperson
Qualifications
MB BS Hons (Monash), MD, FRCOG, FRANZCOG, CREI, FAICD, Cert Mgt (Macquarie)

Professor Gab Kovacs AM is a specialist in reproductive gynaecology and has been a member of the Monash IVF team since his return from postgraduate training in the UK in 1979.

He has been President of the Fertility Society of Australia, Family Planning Australia, Family Planning Victoria, and Chairman of the IVF Directors' Group of Australia. Professor Kovacs was a Councillor of the College of Obstetrics and Gynaecology for a period of six years having chaired its Continuing Education and Women's Health Committees. He is a director of ACCESS, Australia's national infertility network. He is also Professor of Obstetrics and Gynaecology at Monash University and has published more than 130 scientific papers, over 30 chapters in textbooks, and has written five books for the public and edited four textbooks.

Professor Kovacs interests and expertise are in IVF, ovulation induction, polycystic ovarian syndrome (PCOS), donor insemination, infertility surgery, male sub fertility, contraception and sterilisation.

Professor Kovacs was recognised for his achievements in healthcare by the Australian Government when he was appointed a Member of the Order of Australia (AM) in 2004.

DR G. DAVID ADAMSON
Board Member
Qualifications
M.D. FRCSC, FACOG, FACS

Dr. Adamson is a Board Certified specialist in Reproductive Endocrinology and Infertility and Obstetrics and Gynecology. He is Director of Fertility Physicians of Northern California and the Fertility and Reproductive Health Institute, a Clinical Professor at Stanford University School of Medicine, and Associate Clinical Professor at U.C. San Francisco School of Medicine. Dr. Adamson received his M.D. degree from the University of Toronto in Canada, and his reproductive endocrinology fellowship training at Stanford University. Dr. Adamson has published extensively and is a nationally and internationally recognized expert on IVF, reproductive surgery and endometriosis.

Dr. Adamson is a charter member of the Society of Reproductive Endocrinologists and the Society of Reproductive Surgeons. He has served as President of the American Society for Reproductive Medicine (ASRM), the Society for Assisted Reproductive Technology, and on committees at the Food and Drug Administration, National Institutes of Health, and Centers for Disease Control. He has also served on the National NCICS VC Board for 10 years. Recognised by Good Housekeeping Magazine as one of the best 400 physicians for women in America, he received the 2004 Outstanding Achievement in Medicine award from the Santa Clara County Medical Society.

MR ANTHONY RUTHERFORD
Board Member
Qualifications
MB BS, FRCOG

Mr. Rutherford is a Past Chairman of the British Fertility Society and currently Honorary Senior Lecturer at the University of Leeds in the UK.

Mr. Rutherford has worked in reproductive medicine since 1980. He trained under the guidance of Professor Robert Winston at the Hammersmith Hospital in London before moving to Yorkshire and setting up the Leeds General Infirmary's Reproduction Medicine Unit in 1991.

Mr. Rutherford is actively involved in reproductive medicine nationally in the British Fertility Society and in further education through the College of Obstetricians and Gynaecologists. He was a founder member of the British Society of Gynaecological Endoscopy and has promoted the use of minimal access surgery in gynaecology since his appointment at the Leeds General Infirmary as a consultant gynaecologist in 1991.

DR CANDY COOKSON-COX
Board Member
Qualifications
EdD (Education), MN, BHSc

Dr Candy Cookson-Cox has been associated with the health and education sector for 30 years and has held a number of senior positions in New Zealand and overseas. Candy believes that all people should have timely access to accurate, evidence based and user friendly health information that seeks to

empower the individual to make informed decisions in collaboration with their health care specialist and significant others.

Dr Cookson-Coe is currently engaged as the Child and Youth Mortality Review Coordinator for the Lakes District Health Board in Rotorua New Zealand, as well as acting as an Auditor for the Healthstats program of Quality Accreditation in health services. In addition to her education and research qualifications, Dr Cookson-Coe holds qualifications as a Registered Nurse and Registered Midwife.

MR ANDREW CRAWSHAW
Board Member
Qualifications
LLB (University of Sydney), LLM (University of Cambridge), Grad Dip Mil Law (University of Melbourne)

Andrew Crawshaw is a widely experienced Legal Practitioner. Andrew has provided advice to international companies on matters involving corporate, financial, foreign business establishment and regulatory compliance. He has worked with the law firms of Blake Dawson Waldron in Sydney and Norton Rose in London. He has held senior advisory positions with the Australian Government Departments of Justice, and Health and Human Services involving policy formation and legislation development. Andrew's particular interests lie in healthcare and education. Andrew is also an Executive Director on the Board of Management of Sonoa Healthcare.

MS KATE PRYDE
Executive Editor
Qualifications
BEd, MBA, CELTA, MAICD, AIM, APACHSM

Kate Pryde is Managing Director of the Sonoa Healthcare Group and has over 20 years experience in education and healthcare. She has extensive international experience in the United Kingdom and the Middle East as well as having a long administrative and clinical career in Australia. In addition to her education and administrative qualifications, Kate holds qualifications as a Registered Nurse, a Registered Midwife and a Critical Care Nurse.

ADDITIONAL INFORMATION

The contents of the IVF4U site and the IVF4U Fertility Report, such as text, graphics, images, and other material are for informational purposes only.

The content is not intended to be a substitute for professional medical advice, diagnosis or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition.

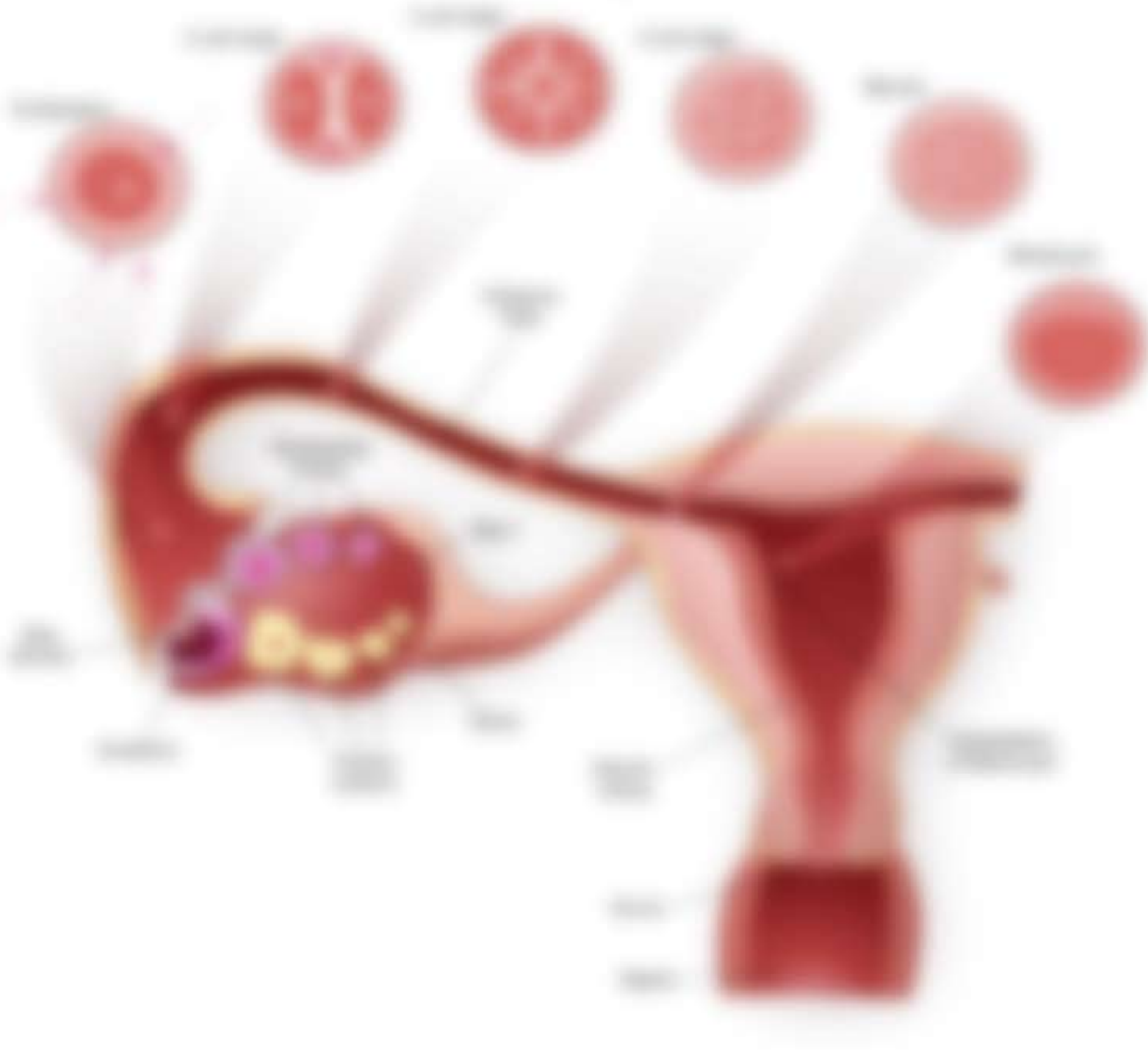
Never disregard professional medical advice or delay in seeking it because of something you have read on the IVF4U site or in your IVF4U Fertility Report.

If you think you may have a medical emergency, call your doctor immediately.

IVF4U does not recommend or endorse any specific tests, physicians, products, procedures, opinions, or other information that may be mentioned on the site. Reliance on any information provided by IVF4U, IVF4U employees, others appearing on the site at the invitation of IVF4U, or other visitors to the site is solely at your own risk.

The IVF4U site and the IVF4U Fertility Report may contain health or medical-related materials that are sexually explicit. If you find these materials offensive, you may not want to use our site. The site and the content are provided on an "as-is" basis.

Natural Ovarian Cycle



Stimulated IVF/ICSI Cycle