IVFAustralia
A MEMBER OF VIRTUS HEALTH

Your

pathway of care

IVFAustralia's guide to assisted reproduction

ivf.com.au ◆ 1800 111 483

YOUR FERTILITY FAMILY

Welcome to IVFAustralia

The purpose of this booklet is to guide you through your options for fertility treatment – an extraordinarily complex and emotional experience. This booklet will give you an overview of the information your fertility specialist and the team of experienced nurses, counsellors and scientists will discuss with you during your pathway of care.

Wanting to start a family of your own and not conceiving as quickly, or naturally, as you might have expected is extremely challenging. It often comes as a shock when that carefully planned pregnancy does not happen. For some couples, this can be the start of a long and very difficult road to achieving the dream of creating a family. These days, however, with the help of assisted conception, many couples are successful in achieving that goal. For some, all that is needed is advice or a simple approach, for others high level technology such as IVF, may be needed.

At IVFAustralia, we understand how important having a family is to you and can assure you that we will provide you, every step of the way, with the highest standard of fertility care available.

Your treatment will be co-ordinated by an expert fertility specialist who is supported by an experienced team of nurses, counsellors and scientists in our network of local fertility clinics.

Our collective medical and scientific expertise is supported by the highest level of technology available enabling us to achieve high pregnancy rates, in a caring environment that will meet all of your needs. If required, technology that is only available to this Group including Digital High Magnification sperm assessment (to assist in cases of severe male infertility), Oosight (polarised light viewing of eggs for fertilisation improvements) and Array PGD (overnight results of chromosome assessment) is accessible to you.

Our extensive network of clinics across Sydney, the Central Coast, Newcastle and Canberra allows us to provide your treatment at a location convenient to you.

We are committed to providing you with excellence in fertility care and look forward to supporting you in your treatment pathway.

The pathway to IVF treatment

Consulting with your fertility specialist

Meeting with the Nurse Coordinator to take you through Orientation

Your cycle begins. Ovaries are stimulated for 2 weeks by hormone injections

Ovulation induction
Frozen Embryo Transfer

Free counselling during & post cycle

Regular ulltrasounds and blood monitoring

Day surgery for egg collection and partner provides sperm sample

Same day egg fertilisation in the IVFAustralia laboratory (IVF or ICSI)

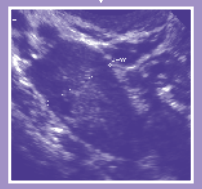
Following fertilisation embryos are grown in individual incubators

Embryo is transferred (extra embryos may be frozen)

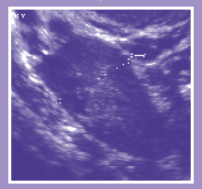
Embryo freezing. This can take place on day 3 – 5 of embryo growth

Pregnancy blood test 2 weeks after embryo transfer

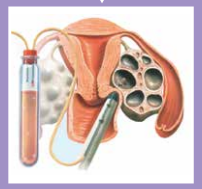
Fertility specialist will undertake six week foetal heart beat ultrasound



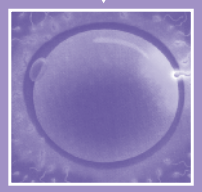
Unstimulated ovary on ultrasound



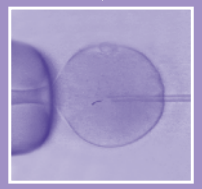
Stimulated ovary on ultrasound



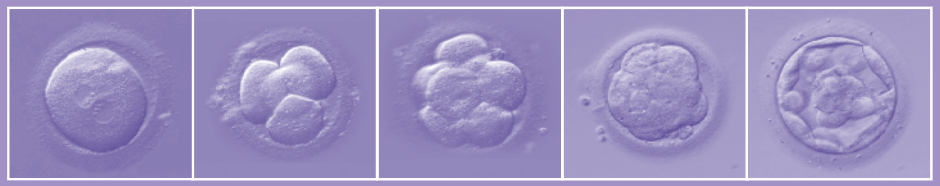
Egg Collection



IVF
In Vitro Fertilisation



ICSI
Intracytoplasmic Sperm Injection



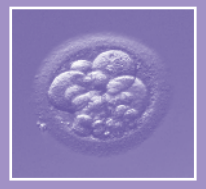
Fertilisation

Day 2
Good Embryo

Day 3
Good Embryo

Day 4
Morula

Day 5
Embryo Blastocyst



Day 2
Bad Embryo

The language of IVF

You'll see a lot of medical terms in this booklet ... this is what they mean

Advanced embryo selection
A preimplantation genetic diagnosis test that screens all chromsomes in a developing embryo allowing selection and fresh transfer of the embryo with the best chance of success.

AH (Assisted Hatching)
The procedure in which the outer layer of the embryo (called the zona) is thinned by a laser to help the embryo implant more easily.

Anti sperm antibodies
Antibodies (that can develop in the bodies of either men or women) block the movement or function of the sperm.

ART (Assisted Reproductive Technology)
A collective term for fertility treatments.

Blastocyst
The term for an embryo five days after fertilisation which has now developed a special shape with different parts identifiable and a fluid-filled cavity.

Cervix
The neck of the womb. The embryo transfer normally involves passing a small soft catheter through this.

Curettage (D&C)
Having the contents or the lining of the uterus removed under anaesthetic, either by scraping it with an instrument (called a curette) or by suctioning out with a soft plastic tube.

Digital High Magnification
This is the most advanced method of performing MSOME selection of sperm for optimum fertilisation.

Donor insemination
The use of sperm from a male donor in order to achieve a pregnancy.

Ectopic pregnancy
A pregnancy that implants in the wrong part of the body most commonly in a fallopian tube. This pregnancy cannot develop in to a baby but can pose severe problems for the mother.

Egg collection
The stage of an IVF treatment cycle where the woman's eggs are collected under vaginal ultrasound.

Embryo
Once the egg has joined with the sperm it is called an embryo.

Embryo transfer
The stage of an IVF treatment cycle where the embryo is transferred back to the woman's uterus via a fine catheter.

Endometriosis
The presence of the normal lining of the uterus (called the endometrium) in abnormal locations in the body such as the Fallopian tubes, ovaries and peritoneal cavity.

Endometrium
The membrane lining the inside of the uterus.

Fallopian tube
The fallopian tube runs from the ovary to the uterus along which the egg normally travels and where the egg and sperm normally join together.

Follicle
The bag of fluid that surrounds the egg and which can usually be seen on the ultrasound scan.

Follicle Stimulating Hormone (FSH)
A hormone produced and released from the pituitary gland, to stimulate the follicle (and thus the egg) to grow.

Follicular phase
The first half of a woman's ovarian cycle following menstruation and during which the follicles grow.

Gamete
A word that describes both the male and female reproductive cells i.e. the sperm and egg.

hCG
The hormone that is produced by the embryo and is measured in a pregnancy test. Injections of hCG can be used to trigger maturation of the egg followed by ovulation. Injections of hCG may also be used to maintain hormone levels in the second half (luteal phase) of the cycle.

HyCoSy
An ultrasound procedure to test whether or not the fallopian tubes are blocked. It involves the injection of a dye through the cervix and into the uterus.

Hypothalamus
An area of the brain that produces hormones that control body temperature, appetite and the release of hormones from the endocrine glands.

Hysterosalpingogram
A specialised x-ray procedure to test whether or not the fallopian tubes are blocked. It also involves the injection of a dye through the cervix and into the uterus.

Hysteroscopy
A procedure normally carried out under anaesthetic where the cervix is dilated to allow a small camera to pass through the cervix into the lower end of the uterus to give a clear view of the lining of the uterus.

ICSI (Intracytoppasmic Sperm Injection)
The fertility technique where a single sperm is selected and directly injected into an egg. High Magnification ICSI uses extremely high magnification to help sperm selection for specific patients.

Implantation
The embedding of the embryo in the lining of the uterus 6-7 days after fertilisation.

IMSI (Intracytoplasmic Morphologically selected Sperm Injection)
This is the name of the technique where scientists inject MSOME selected sperm in to an egg to assist fertilisation. We use Digital High Magnification for this technique.

Intra-uterine Insemination (IUI)
Treatment that involves inserting the partner's concentrated semen through the neck of the womb into the uterus itself close to the time of ovulation.

IVF (In Vitro Fertilisation)
The procedure, by which an egg and sperm are joined together outside the body, in a specialised laboratory. The fertilised egg (embryo) is allowed to grow in a protected environment for some days before being placed back (transferred) into the uterus.

Laparoscopy
Keyhole surgery that involves inserting a small telescope (laparoscope) through the abdominal wall so that the pelvic organs can clearly be seen.

Luteal phase
The last 14 days of a menstrual cycle after ovulation.

LH (Luteinising Hormone)
A hormone produced and released by the pituitary gland. It is responsible for triggering ovulation.

MSOME (Motile Sperm organelle morphology examination)
Assessing sperm shape under very high magnification.

Oestrogen (or Estrogen)
The primary female hormone produced mainly from the ovary from puberty until the menopause.

Oocyte
The fully mature egg produced from the ovary each month.

Oosight
This is an approach to identifying the position, structure and normality of the chromosomal spindle (the genetic material) in the egg prior to ICSI fertilisation.

OvarhHyperstimulation Syndrome (OHSS)
A condition where women over-respond to the fertility drugs and can develop severe fluid retention and abdominal swelling.

Ovaries
The female sex glands which produce eggs.

Ovulation
The time the egg is released.

Ovulation Induction
Medication used to stimulate growth and release of the eggs. This may be used in combination with Intra-Uterine Insemination.

Pituitary Gland
The gland located at the base of the brain, which controls most hormone functions in the human.

hPre-implantation Genetic Diagnosis (PGD)
Testing the genetic makeup of the embryo before it is transferred back into the woman.

Progesterone
The hormone produced by the ovary after ovulation to maintain the pregnancy.

Semen
The ejaculated fluid comprising sperm and other secretions of the sex glands of the male.

Sonohysterogram
A sonohysterogram (ultrasound) or hysterosalpingogram (HSG) are diagnostic tests used to discover abnormalities in the uterine cavity and test if the fallopian tubes are normal.

Spermatozoa (sperm)
The male reproductive cells (gametes).

Uterus (womb)
The female reproductive organ that supports the developing fetus. It is the source of a woman's menstruation.

Ultrasound (scan)
A modified form of radar used to see the follicles in the ovary and pregnancy in the uterus. This may be done either through the abdomen or (more usual in IVF) through the vagina.

Vasectomy
A form of contraception for men where the vas deferens (the tube along which the sperm passes) is tied off or clipped.

Vas Deferens
The tube that transports the sperm from the testes.

Understanding your fertility

One in six Australian couples of reproductive age experience difficulties conceiving a child. With the advances in reproductive technology, IVF and other forms of assisted conception now provide success rates higher than that of natural conception.

The single most important factor affecting the chance of conceiving is the woman's age, irrespective of age, if a pregnancy is not achieved within 6 months of trying to conceive naturally, seeking medical advice is recommended.

Our fertility specialists play a significant role in the scientific and clinical advances in assisted reproduction, giving patients access to some of the best and safest outcomes worldwide.

Our approach is to provide the least invasive, most effective treatment option for patients to maximise their chance of conception. At your initial consultation, your fertility specialist will give you an indication of your likelihood of conceiving, which will vary between 5-55% per treatment cycle depending on your individual circumstances and on the specific treatment recommended. Factors that may influence the chance of success include:

- Each partner's age
- How long you have been trying to conceive
- Whether either partner has been a parent previously
- The number of eggs retrieved
- The number of eggs fertilised (which is also dependent upon the quality and number of sperm)
- The number of embryos transferred
- The state of the woman's uterus.

Your doctor will review your medical history, undertake some investigative tests and then recommend an individualised treatment plan.

To prepare for treatment

IVFAustralia clinics hold regular free Information Evenings for patients and the general public, to provide an overview of some of the main forms of fertility treatment offered, with a focus on IVF (including ICSI).

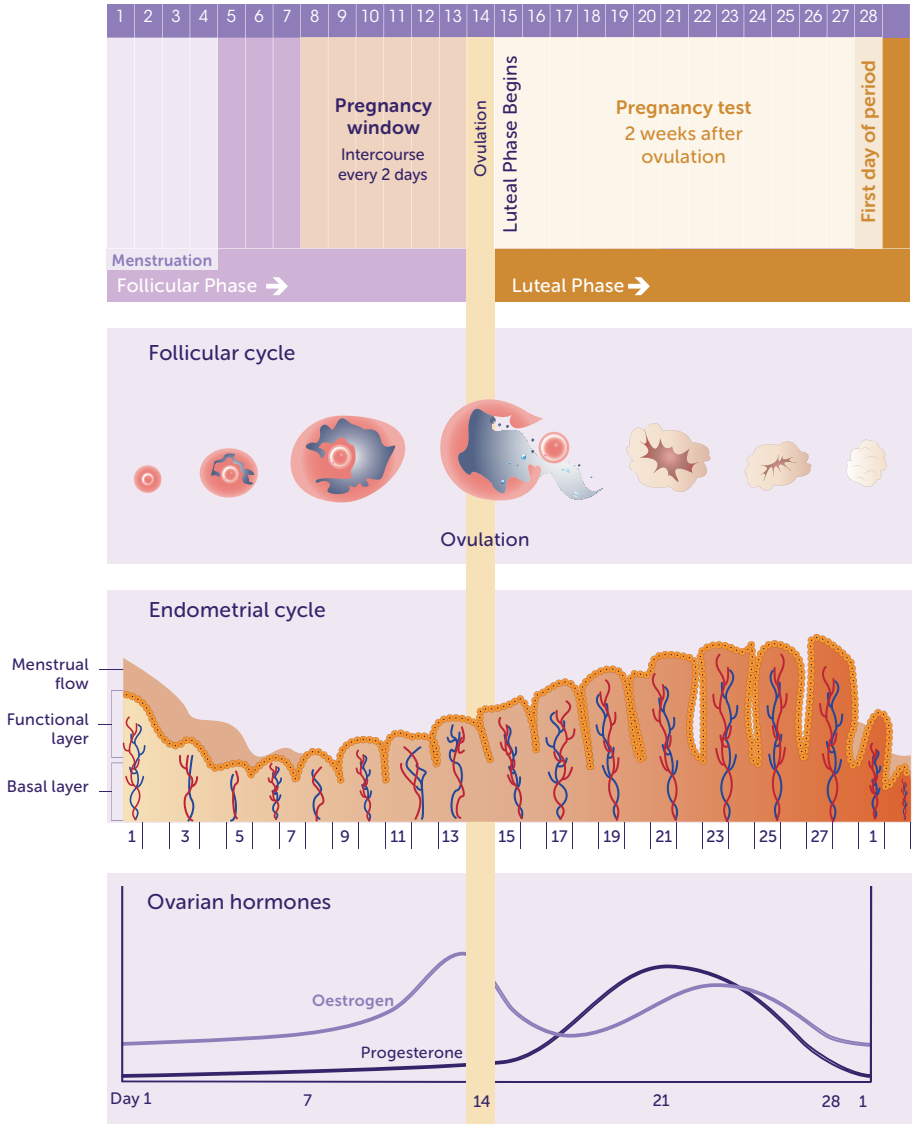
These evenings are held in our clinics across Sydney, the Central Coast, Newcastle and Canberra. Check our website – ivf.com.au for schedules and details on how to register.

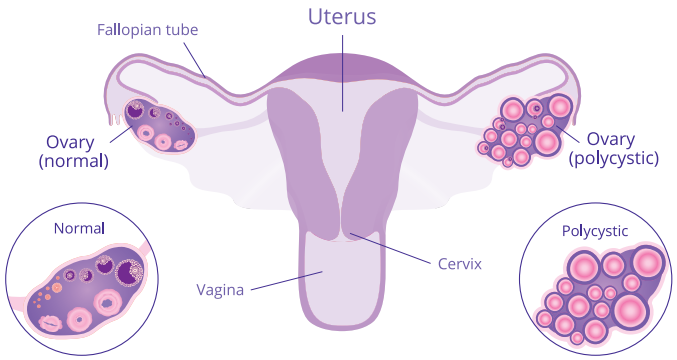
Our websites also display a wealth of information on all aspects of the treatment, care and support programs we provide, some of which are not outlined in this book.

Understanding ovulation and natural conception

To give yourself the best chance of conceiving you should be having unprotected intercourse every 2-3 days and particularly just prior to the female partner ovulating. The most fertile time is between days 8-14 of a regular monthly cycle.

The simplest way to work out when you ovulate is to subtract 14 days from the number of days in your cycle. If there are 28 days from the start of your period to start of the next period you can expect to ovulate on day 14, so time intercourse 2-3 days prior to ovulation. You may notice signs of ovulation such as increased vaginal mucus, breast tenderness, or a twinge in the abdomen as the egg is released.





Every woman's cycle is different and from time to time a woman's own cycle may change due to illness or stress.

Some people advocate techniques such as temperature charting or using hormone kits to time ovulation. However, these techniques only tell you, after the event that you have ovulated. As the ideal time for intercourse is before ovulation, these tests are not helpful in assisting you to conceive and are therefore not recommended at our clinics.

From the start of bleeding (your period) ovaries will develop a dominant 'follicle' (a small sac) which contains an egg. After about 14 days this follicle has grown in size, the egg has matured and is 'released' – or ovulated. The egg then survives for around 24 hours during which time it moves into the fallopian tube and awaits fertilisation by sperm – this is your fertile time.

Following ovulation, the lining of the womb has built up ready to accept and nurture the growing embryo. To achieve fertilisation, good quality sperm must be in the fallopian tube to meet the egg.

Sperm is ejaculated into the upper vagina during intercourse. The sperm need to swim through the secretions at the neck of the womb (cervix) and then upwards through the uterus (womb) to the opening of the fallopian tubes and then along the tube to meet the egg.

Half a million sperm are required in the fallopian tube in the vicinity of the egg to achieve fertilisation of the egg by a single sperm. It is not known why so many sperm are required but it is known that sperm can survive for 72-96 hours, so intercourse prior to the time of ovulation ensures the presence of sperm in the fallopian tubes at the correct moment.

The structure of sperm is a head containing the genetic material to be used during fertilisation and a tail that is used for movement. Sperm motility is essential to swim in to the cervical mucus to penetrate the outer coverings of the egg. Sperm also require normally shaped heads to bind to the surface of the egg.

Once the egg is fertilised by a sperm, an embryo is created and over 4-6 days moves down the fallopian tube to the womb. The embryo then attaches to the lining of the womb and hopefully flourishes. A naturally conceived pregnancy requires:

- Ovulation
- Normal healthy sperm
- Normal tubes and uterus

Not surprisingly then the main reasons for a couple having difficulty conceiving are concerned with these 3 factors.

Why are we not conceiving naturally as quickly as hoped?

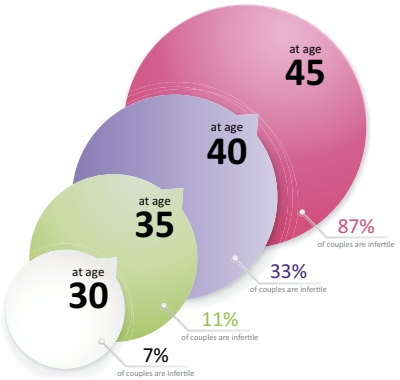
Causes of infertility are many and varied and involve male, female or a combination of factors. They include problems with:

- the production of sperm or eggs
- the structure or function of male or female reproductive systems; and/or
- hormonal and immune conditions in both men and women.

After a woman's age, a little known fact is that male infertility is the biggest single factor influencing a couple's chance of conception (40% sperm related cause).

In 10-20% of couples no cause will be found, this is called Unexplained Infertility, which can be particularly frustrating for you and your partner.

You may have undergone some preliminary tests with your GP or referring gynaecologist these will all be considered when your fertility specialist is reviewing your history and recommending a treatment plan.



Further investigations may be necessary and typically these include:

Checking ovulation

The first step in investigating a woman's fertility is to establish whether or not you are ovulating (releasing an egg) every month. This is normally done with a blood test. The hormones responsible for the development of eggs within the ovary are Follicle Stimulating Hormone (FSH) and Luteinising Hormone (LH). Oestrogen and Progesterone are produced from the cells in the follicle. The levels of these hormones will rise and fall depending on the stage of a woman's cycle.

Ovulation can normally be confirmed by blood tests which measure the levels of hormones at specific stages of your cycle, or a transvaginal ultrasound scan can be used to visualise the follicles within the ovary and by measuring their size, we can ascertain the stage of follicle development. Ultrasound scanning may also be used to check the condition of the endometrium (the lining of the womb) and diagnose any polyps and fibroids.

Ovarian reserve

Women are born with a finite number of eggs which mature and are 'lost' during mestrual cycles. Once a woman reaches 35 years of age the rate at which egg quality and numbers decline is more dramatic. Anti-mullerian hormone blood test can help understand the number of eggs a woman has left in their ovarian reserve – no indication of quality simply quantity which can be explained by your fertility specialist.

Fallopian tubes and uterus

Following ovulation and semen analysis, your fertility specialist may suggest the need to check tubal patency (checking tubes are open) and the condition of your uterus and ovaries.

A **hysterosalpingogram or ultrasound HyCoSy** is commonly used to check tubal patency. This is an x-ray or ultrasound procedure involving the injection of a dye through the cervix and into the uterus. The passage of the dye through the fallopian tubes will show if there is a blockage or spasm that may need further investigation.

A **Laparoscopy** is a more invasive way of checking both the patency of fallopian tubes and the condition of the uterus and ovaries. This procedure is usually undertaken as a day case under general anaesthetic in theatre and involves inserting a small telescope (laparoscope) through the abdominal wall so that the pelvic organs can be clearly seen. A dye may also be used to assess tubal patency.

A **Hysteroscopy** is an investigative procedure to assess the inside of the uterus, particularly in cases of infertility, recurrent miscarriage or abdominal bleeding. It is usually done at the same time as a laparoscopy and is helpful in diagnosing uterine abnormalities such as fibroids, intrauterine adhesions, polyps and congenital malformations. The cervix is dilated to allow the hysteroscope (narrow telescope) to be passed through the cervix and into the lower end of the uterus. The uterus is then expanded to enable a clear view of the internal structure.

After these tests about 80% of couples experiencing some difficulties conceiving will be diagnosed with one or more of these conditions. Sperm abnormalities account for 40%, tubal damage about 30%, and failure to ovulate about 30%, 20% have no cause found and are deemed to be unexplained infertility.

Initial Investigations for men

Changing quality and quantity of sperm

Normal morphology Abnormal morphology

Semen analysis is the most important test in the evaluation of a male's fertility. The test provides an accurate measurement of the number of sperm (stated in millions per ml) the motility of the sperm, their size and shape as well as the volume and consistency of the sample. A semen sample is produced via masturbation, following 2-5 days of abstinence, into a clean, dry container either at home and delivered within an hour to our lab, or in a discreet room within the Clinic.

A normal semen analysis result will show a sperm count of at least 15 million sperm per ml, with at least 40% of the sperm showing forward progressive movement.

A minimum of 4% of the sperm should be normally formed and anti-sperm antibodies should affect less than 50% of the sperm. A repeat test will be undertaken if the initial results are poor to rule out natural fluctuations in sperm quality. If no sperm are present, this may suggest a blockage in the vas deferens (the tubes that transport the sperm from the testes), or that sperm are failing to be produced. A physical examination and hormone assessment may confirm the cause.

Men who have undergone a vasectomy and are hoping to have more children have options: vasectomy reversal or a simpler procedure where sperm is surgically collected.

Sperm DNA fragmentation test

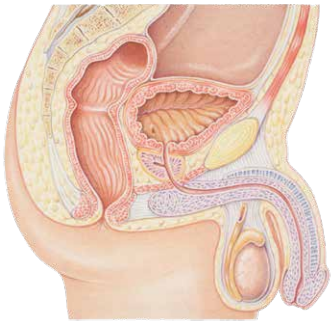
If a man has a repeated abnormal sperm analysis the scientists may suggest further advanced scientific testing including a sperm DNA fragmentation test which will assess the number of sperm in a sample that have DNA damage that may affect fertilisation. This test is suggested for:

- Couples with past history of recurrent miscarriage
- Men with leukocytes on detected by semen analysis
- Men approaching 50 years of age
- Men with past history of prostatitis or Type II diabetes
- Poor fertilisation results
- Poor embryo quality and embryo development
- Long history of unexplained infertility
- After 2 or 3 failed ART attempts
- Males who are exposed to workplace chemicals or extended increased heat.

If a high Sperm DNA fragmentation is discovered, our clinics offer further advanced technologies to then sort the sperm so only the very best sperm unaffected by vacuoles in the sperm head are selected for fertilisation. Talk with your fertility specialist.

Male reproductive issues

- Blocked/absent vas deferens
- Low sperm numbers and/ or poor sperm movement
- High numbers of abnormal shaped sperm
- Antisperm antibodies
- Failure of sperm production



Range of comprehensive treatments

New procedures and improved assisted conception techniques are constantly being introduced and we will provide you with the most up-to-date treatment. Many old techniques have been superseded and, nowadays, most people will require either intrauterine insemination (IUI), or a form of in vitro fertilisation (IVF).

Ovulation induction (OI) & Intrauterine insemination (IUI)

Ovulation induction and intrauterine insemination are approaches commonly used to treat infertility in women who have healthy fallopian tubes and where more complex treatments are not appropriate.

Ovulation induction is useful in two circumstances:

- Where there is an abnormality of ovulation in the female
- To improve the pregnancy rates of stimulated uterine insemination in women who ovulate naturally.

Ovulation Induction

Ovulation is normally confirmed by blood tests (to measure the level of hormones at specific stages of a woman's cycle) or a transvaginal ultrasound (to visualise follicular development and the thickness and appearance of the lining of the womb).

Ovulation induction involves taking a medication called clomiphene citrate, which is an oral tablet that induces ovulation by causing eggs to develop in the ovaries and be released. Artificial hormone preparations of follicle stimulating hormone (FSH) may be used to encourage the development of one or more follicles and therefore more than one egg, during the woman's cycle. Clomiphene may be used in conjunction with timed intercourse, or intrauterine insemination (see below), to ensure that the sperm are introduced at the right time. The cycle is monitored more closely than a natural cycle with vaginal ultrasounds and/or urine tests to check follicle development and/or blood tests and urine tests to observe hormone levels.

Human Chorionic Gonadotropin, known as hCG is the hormone that is produced in pregnancy by the embryo, and may be used in injection form to trigger the process of ovulation.

Drugs used in ovulation induction are:

- Follicle Stimulating Hormone (FSH)
- Clomid (clomiphene citrate)
- hCG (human Chorionic Gonadotropin)

Intrauterine Insemination (IUI) – also known as artificial insemination

Intrauterine insemination involves inserting the male partner's (or donor) prepared semen through the neck of the womb (cervix) and into the uterus close to the time of ovulation.

This procedure can be performed during a natural cycle or with artificial hormone stimulation (i.e. ovulation induction), however intrauterine insemination with artificial hormone stimulation is almost always the preferred option.

In both instances, in order to determine the day of ovulation, monitoring is performed throughout the woman's cycle and this is often referred to as 'cycle tracking'.

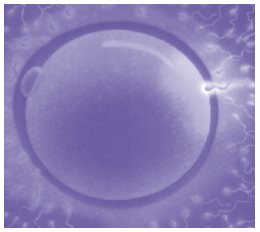
Intrauterine insemination is more beneficial in women who are not of an advanced maternal age. Intrauterine insemination is a less invasive form of treatment than IVF, however it also has a lower chance of success per cycle. Depending on your circumstances and other factors such as your age, your fertility specialist may recommend moving straight to IVF.

In Vitro Fertilisation (IVF)

Conventional IVF involves placing the egg from the female partner together with many thousands of sperm (typically 100,000) prepared from a semen sample provided by the male partner, and allowing the process of fertilisation to take place over a number of hours in the culture dish in the laboratory. The fertilised embryos are then grown in the laboratory over a period of 2–5 days before being transferred to the woman's uterus in a simple procedure called the embryo transfer.

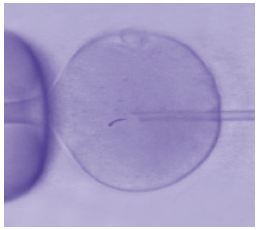
Intracytoplasmic Sperm Injection (ICSI)

For many couples, conventional IVF will be unlikely to result in fertilisation either because the number of sperm available is insufficient or because there is reason to believe that the sperm will be unable to penetrate the egg. In such cases the technique of Intracytoplasmic Sperm Injection (ICSI) is usually performed.



IVF - In Vitro Fertilisation

ICSI involves the direct injection of a single sperm into each egg using very fine micromanipulation equipment. Given that the human egg is one tenth of a millimetre in diameter and the sperm 100 times smaller, this is a very delicate procedure performed by highly skilled embryologists under a microscope. The technique can also be used in conjunction with sperm which has been obtained surgically from the male reproductive tract when sperm are not present in the semen. This is a very successful technique in overcoming problems of male infertility.



ICSI - Intracytoplasmic Sperm Injection

In this approach eggs will be collected as in an IVF procedure, it is only the fertilisation method that differs from conventional IVF.

Freeze-storage of embryos

It is important to note that not all couples will have extra embryos, or extra embryos that are suitable for freezing. Where there are extra embryos, the scientists will select only those that they think will survive the process. Even when they freeze the 'best', some embryos still do not survive. About 50% of treatment cycles do have more than two suitable embryos and these can be frozen. We acknowledge some patients cultural or religious beliefs direct that only one embryo is created and we will accommodate these wishes.

Fertility preservation

Men and women diagnosed with cancer who wish to conceive at some stage in the future may need to consider techniques to preserve their fertility as some forms of cancer therapy can affect their fertility.

Freezing mature oocytes (eggs)

Recent research into egg freezing is so far very promising. We are currently carrying out research on the Cryotop technique for freezing eggs. This involves very rapid freezing in a tiny amount (less than 0.1 microlitres) of a special vitrification solution, before storing in liquid nitrogen. This process prevents ice crystals forming which damage the cellular infrastructure of the egg and is one of the current problems with freezing eggs.

Egg freezing is currently offered to specific groups of patients such as those undergoing cancer therapy, but it may in the future be offered more widely to different groups such as single women.

Donor programs

We assist couples who may require donor sperm, eggs or embryos in order to achieve pregnancy (both known and de-identifiable donors). We offer a comprehensive service to assist couples considering our donor program to ensure that all legal, social and ethical issues are properly considered. See separate booklets for information on these options.

Genetics and Pre-implantation Genetic Diagnosis (PGD)

We have genetic counselling available to assist couples with known or suspected genetic problems. Our laboratories support this program with sophisticated genetic testing facilities which can be used before or during treatment.

Pre-implantation Genetic Diagnosis (PGD) is the earliest form of prenatal diagnostic screening which aims to prevent embryos carrying a genetic abnormality being transferred into the uterus.

Advanced laboratory techniques

Sometimes when IVF is initially unsuccessful, a number of technological advances can be applied to give success in different cases.

Assisted hatching
In some cases of IVF, the embryo does not implant because the shell (the zona) of the embryo is too thick to allow the embryo to hatch through it. Using micro-lasers, the scientists can carefully thin the shell of the embryo to make it easier for the embryo to implant.

This technique is most helpful in older women who have previously had a disappointing outcome to their IVF cycles.

Oosight technology
The use of Oosight technology (previously known as PolScope) gives the scientist the ability to determine if the genetic material is visible in the egg, where the genetic material is in the egg, and which eggs may have the best pregnancy potential. This approach is most useful where there have been past problems with fertilisation or implantation of the embryos.

Digital High Magnification
In some couples with otherwise unexplained infertility, the only problem that can be identified is a higher than usual level of fragmentation of the DNA (genetic material) in the sperm. This means that the sperm may not be able to fertilise the egg. Digital High Magnification is an advanced technique enabling scientists to view and select sperm most likely to produce a viable pregnancy.

Advanced Embryo Selection
Advanced Embryo Selection™ preimplantation genetic diagnosis is a new technique to screen all the chromosomes in a developing embryo, with overnight results allowing selection and transfer of the embryo with the greatest liklihood of IVF success.

A day 3 embryo is biopsied so that, with rapid results, a patient's cycle can continue with a fresh embryo transfer, the 'gold standard' in IVF. This technique is particularly suited for people who are:

- over 38, or
- have a history of miscarriage, or
- have experienced repeated unsuccessful IVF
- as well as couples with hereditary chromosomal conditions.

Counselling services

All our team are highly experienced in helping patients cope with the emotional aspects of IVF. We also have an experienced fertility counselling team (all psychologists) to assist couples with emotional or relationship issues as well as specialised counselling for any genetic conditions that may be identified.

General pre-pregnancy tips

Some simple tips we suggest to help you maximise your chances of conceiving include:

- Appropriate weight (ie Body Mass Index as a guide) evidence suggests that fertility improves dramatically if a couple who are overweight can achieve a 5% reduction in weight
- Healthy diet
- Stop smoking
- No recreational drug use
- Reduce alcohol intake
- Regular intercourse 2-3 times per week
- Regular moderate exercise eg walking, social tennis
- A daily intake of 500ug folic acid (3 months pre conception and during first trimester of pregnancy to reduce neural tube defects)
- Multi-vitamins (may be of benefit to overall health)
- Blood tests to check for rubella status, blood group, Rh factor, Hep B and Hep C

Benefits of being emotionally prepared for treatment

Embarking on fertility treatment often means coping with a mixture of emotions from joy and excitement to grief and great sadness. Counselling gives you the opportunity to look at your responses, learn how to cope and develop emotionally as an individual and as a couple from the experiences.

Many people feel reassured and strengthened from the counselling process. It is important not to wait until you are overwhelmed before seeking counselling support. Our specifically trained fertility counsellors can help to:

- Provide independent support and someone to talk to about how you or your partner may be feeling
- Prepare you for your fertility treatments and discuss the options available when making decisions about changing or stopping treatments
- Work on your relationship with your partner to support your treatment
- Support you through the emotions involved in trying to achieve a pregnancy
- Cope with other people's pregnancies and births by providing some protective (self preservation) strategies for you when faced with emotional settings
- Discuss reactions of families, friends and work colleagues
- Explore some strategies to help you feel more in control
- Cope with unsuccessful treatment cycles and/or miscarriage
- Discuss the anxieties of pregnancy and preparation for parenthood
- Deal with the specific issues related to donor treatment cycles

During a treatment cycle IVFAustralia provides counselling at no cost to you

You may also consider joining one of our patient social and support groups, by contacting the counsellor in your clinic or logging on to ivf.com.au for further information. ACCESS, Australia's National Support Group is an independent consumer based organisation which offers information via newsletter, fact sheets and self help groups access.org.au

Books that may be helpful. You can download a full book and resource list from our website

Sex at 6pm: *A Personal Journey through IVF.*
Annarosa Berman. Publisher: New Holland

Swimming Upstream: *The struggle to conceive*
David Rawlings & Karen Looi. Publisher: Peacock Publications

Conquering Infertility: *Dr. Alice Domar's mind/body guide to enhancing fertility and coping with infertility.*
Alison Domar & Alice Kelly. ublisher: Penguin Books.

The Infertility Survival Guide: *Everything you need to know to cope with the challenges while maintaining your sanity, dignity, and relationships*
Margo Fluker & J Daniluk. Publisher: New Harbringer Publications

Baby Making: *The Technology and Ethics*
Susan Downie. Publisher: The Bodley Head
The Infertility Handbook. Jacqueline Tomlins. Publisher: Allen and Unwin

Getting started

Pre-treatment consultation

Before starting a treatment cycle, during a consultation with your fertiltiy specialist all the relevant consent forms will be signed, your treatment plan explained and your questions answered.

All your previous investigations and treatment will be reviewed, and blood tests updated where appropriate (including HIV, Hepatitis B and C). It is often necessary to have a final sperm assessment – called the Trial Wash – to allow the scientists to thoroughly assess the suitability of your sperm for the proposed method of treatment.

Prior to this visit we recommend you read this booklet carefully again and consider aspects of your care such as:

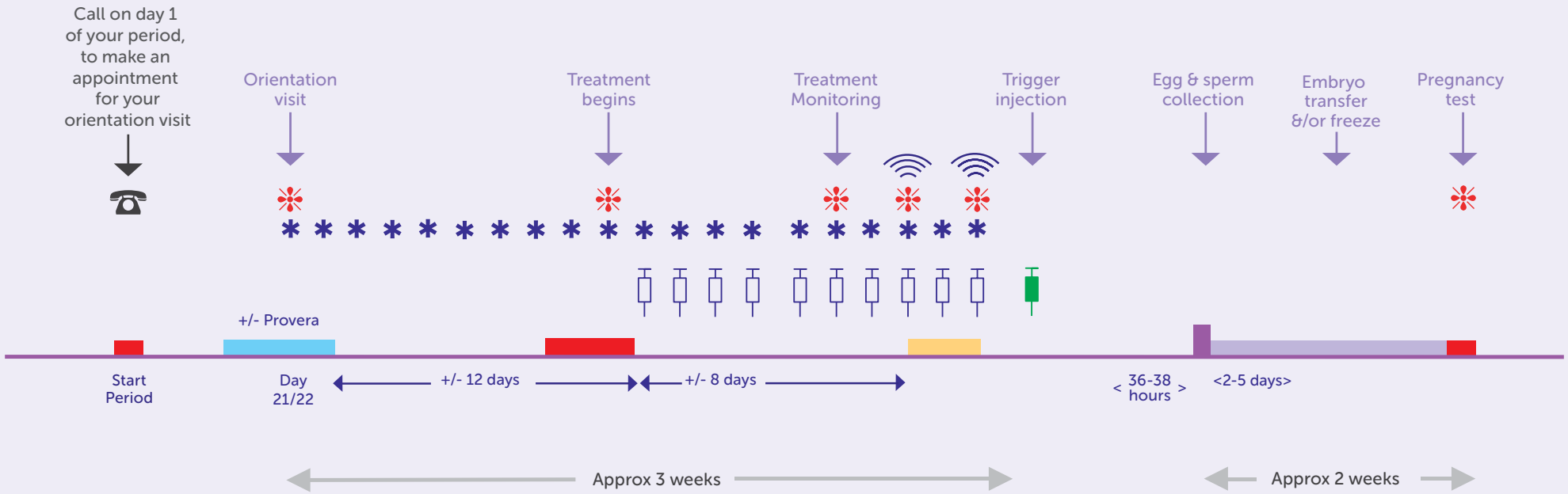
- Whether you wish to have extra embryos frozen for later use
- What other issues or procedures you would like to discuss or have clarified further

If you postpone treatment for more than 6 months after this consultation, another visit will be required as treatments are constantly being updated.

There are a number of stages involved in a treatment cycle and we begin with a summary of the most commonly used protocols then go on to provide a more in-depth explanation. The summary is only an example – your treatment is individualised by your fertility specialist, in collaboration with the clinical and scientific team.

Notes:

Long Down Regulation (Agonist) Treatment Cycle

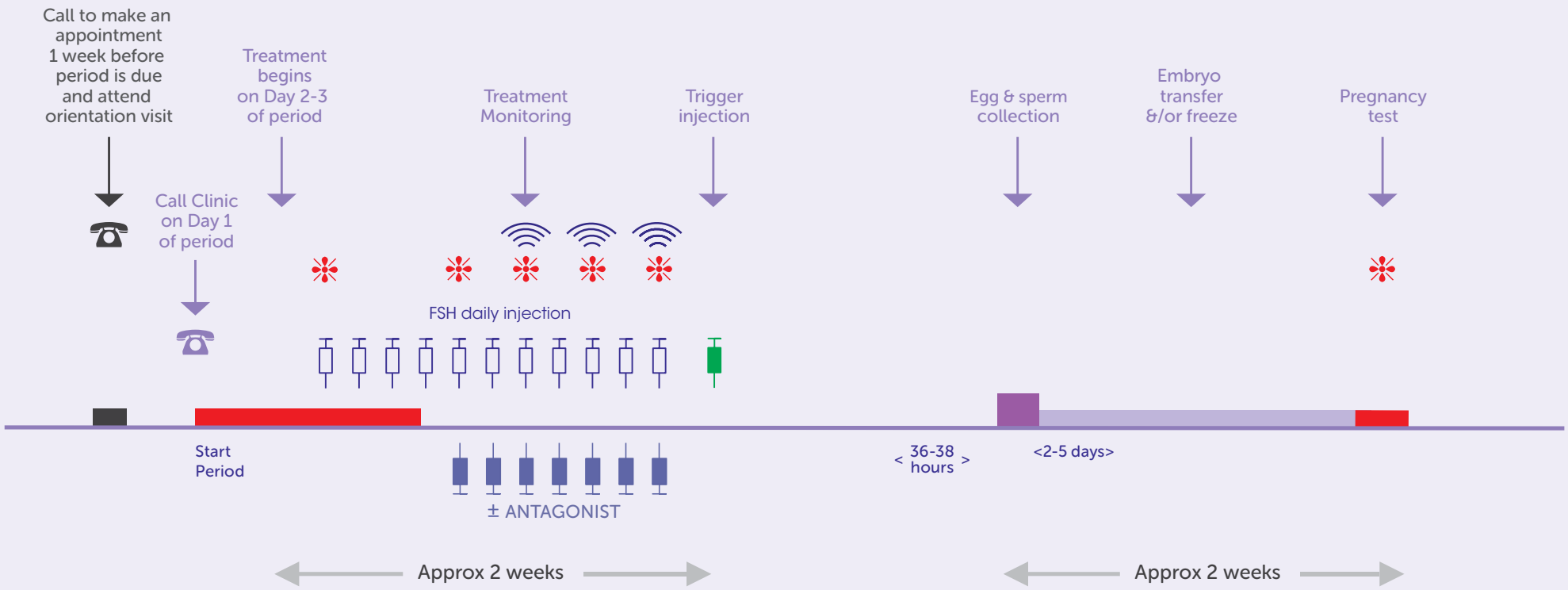


Long Down Regulation (Agonist) Treatment Cycle

IVF treatment is tailored to your specific needs by your fertility specialist. Most patients who undergo IVF will be prescribed one of two main treatment protocols known as the Long Down Regulation and Antagonist treatment cycles. These are summarised below and over the page to give you an indication of the steps involved. Every patient is different however and your specific treatment may vary to what is described.

1. **Make appointment.** Within a few days of the start of your period phone the clinic nurses, to arrange an Orientation Visit with them in about 3 weeks time. Some women, commonly those with irregular periods, will be asked to start taking Provera tablets (from day 19) once a day for 5 days.
2. **Orientation visit.** Day 22 (or a day or two either side) attend the clinic for an Orientation Visit with the nurses and a blood test. The nurses will explain the treatment cycle to you, the medications you need to take and the times you will be required to visit the clinic for blood and ultrasound tests. You will collect your GnRH analogue medication (Synarel nasal spray or Lucrin injection), and pay the First Day Fee. From this day you will start the pre-IVF treatment (GnRH analogue) to control (lower) your natural hormones, before the fertility medication starts. You'll continue this (GnRH analogue) until triggering.
3. **Stimulation phase of treatment starts.** About 12 days later, re-visit the clinic for another blood test to make sure your own hormones are low (we call this "down regulated"). Your period may or may not have arrived – it does not matter. The nurses will phone you with the results and will tell you when to begin the daily hormone Follicle Stimulating Hormone (FSH) injections (Gonal-F or Puregon). You must keep taking the GnRH analogue (Synarel or Lucrin) throughout this time.
4. **Treatment monitoring.** From 6-8 days after you begin the FSH injections you will have another blood test and ultrasound of your ovaries. We will continue closely monitoring you with blood tests and ultrasounds until you have an optimum number and size of developed follicles and we can schedule egg collection. If you have your FSH injections at home please do not have one on the morning of these blood tests and/or ultrasound (but do have your Synarel or Lucrin). If your hormones go too high we sometimes coast, i.e. reduce or withhold stimulation until they return to normal. There is a 3 – 4 day window when your eggs reach maturity allowing us adequate time to collect them.
5. **Triggering.** Once we know you are ready, we will advise you when to have your hCG trigger injection and we will schedule the egg collection usually 36 hours later.
6. **Egg collection.** Egg collection is undertaken in a Day Surgery/Hospital either under a light general anaesthetic, under sedation, or under local anaesthetic. Your specialist will guide you to make the decision you feel is appropriate for you. After egg collection your progesterone level will be supplemented by inserting one application of Crinone vaginal gel every night until your pregnancy test 2 weeks later. Before going home we will give you an instruction leaflet. We can provide medical certificates (which do not mention the type of treatment you are having or have any provider addresses).
7. **Sperm collection.** On the morning of your egg collection your partner will need to provide a fresh semen (sperm) sample so we can immediately fertilise your eggs after collection.
8. **Embryo transfer /freeze.** Following fertilisation your embryos will develop for 2-5 days. We transfer the embryos back into the uterus in a simple procedure. Any extra suitable, healthy looking embryos are usually frozen at this time if that is your wish.
9. **Pregnancy test.** About 2 weeks after egg collection visit a Clinic for a pregnancy blood test whether or not you have had a period.

Antagonist Treatment Cycle



Antagonist Treatment Cycle

IVF treatment is tailored to your specific needs by your fertility specialist. Most patients who undergo IVF will be prescribed one of two main treatment protocols known as Long Down Regulation and Antagonist treatment cycles. These are summarised to give you an indication of the steps involved. Every patient is different however and your specific treatment may vary to what is described.

1. **Make an appointment.** Call the clinic to make an appointment for your orientation visit for one week before your period is due. At your orientation visit, the nurses will explain the treatment cycle to you, the medications you need to take and the times you will be required to visit the clinic for blood and ultrasound tests. Call the clinic on the first day of your period to arrange your next visit.
2. **Treatment begins.** On day 2 of your cycle, attend the clinic for a blood test. Providing all of your natural hormone levels are low (which they normally are at this stage of your cycle) the nurses will tell you to begin the Follicle Stimulating Hormone (FSH) injections (Gonal-F or Puregon) that day.
3. **Starting Antagonist.** After four days of injections you start a second injection (the antagonist, either Cetrotide or Orgalutron) to switch off your own hormones and prevent premature release of the eggs.
4. **Treatment monitoring.** From 6-8 days after you begin the FSH injections you will have another blood test and ultrasound of your ovaries. We will continue closely monitoring you with blood tests and ultrasounds until you have an optimum number and size of developed follicles and we can schedule egg collection.

   If you have your FSH injections at home please do not have one on the morning of these blood tests and/or ultrasound. If your hormones go too high we sometimes coast, i.e. reduce or withhold stimulation until they return to normal. There is a 3 – 4 day window when your eggs reach maturity allowing us adequate time to collect them.
5. **Triggering.** Once we know you are ready, we will advise you when to have your hCG trigger injection and we will schedule the egg collection usually 36 hours later.
6. **Egg collection.** Egg collection is undertaken in a Day Surgery/Hospital either under a light general anaesthetic, under sedation, or under local anaesthetic. Your specialist will guide you to make the decision you feel is appropriate for you. After egg collection your progesterone level will be supplemented by inserting one application of Crinone vaginal gel every night until your pregnancy test 2 weeks later. Before going home we will give you an instruction leaflet. We can provide medical certificates (which do not mention the type of treatment you are having or have any provider addresses).
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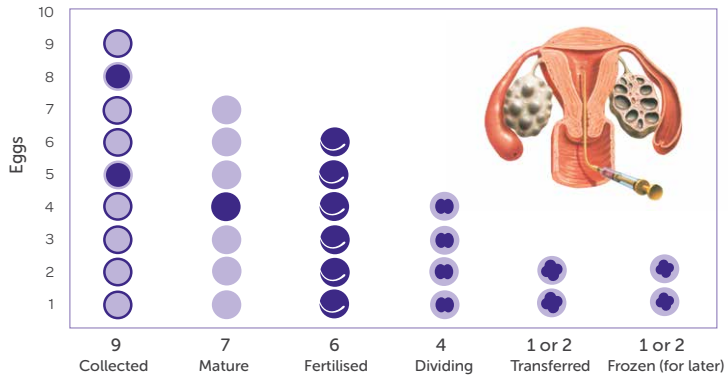
9. **Pregnancy test.** About 2 weeks after egg collection visit a Clinic for a pregnancy blood test whether or not you have had a period.

Hormone stimulation – why?



Stimulating the ovaries allows us to collect more rescued eggs so we have a higher chance of achieving fertilisation and subsequent pregnancy. We do, however, need to be cautious to avoid over-stimulation and the regular blood tests and ultrasounds are important in monitoring you for this reason.

The average number of eggs collected is 9 and from those, on average, we see three healthy embryos develop. Our policy, is to normally transfer only one embryo at a time. If we have three embryos one or two embryos may be frozen and transferred at a later time if a pregnancy does not occur. This gives you another chance from the original cycle of stimulation and procedures – once again please be aware that this is an average and everybody responds differently.

Hormones to stimulate egg production are now given by a pen (similar to a diabetes insulin pen) and this is injected just under the skin with a tiny needle. We will provide you with the necessary pens, needles, syringes, swabs and drugs. Our nurses will teach you how to administer these injections and are happy to supervise your first injections to make sure you are confident with the technique. We will also provide written instructions on giving home injections, depending on which drug(s) you will be using. We appreciate that it is difficult for some people and our nurses are always available to provide support as needed. Some other points:

- Under the Medicare Global Fee structure, if you attend another doctor (your GP) for injections, then you cannot claim a rebate from Medicare and if he/she bulk-bills you, then he/she will not get paid either. You will therefore have to pay this bill yourself. Although daunting at first we encourage you or your partner to let us help you gain the confidence to undertake these injections yourself.
- If you spill or break the daily injections, don't panic – just give us a call. If you spill any of the trigger injection (the hCG given 36–38 hours before your egg collection) call the nurses the next morning and you can be rescheduled – ***don't panic*** – this will not usually affect your chance of success.
- There may be occasions near your trigger time when you will have to wait for your blood result before we can decide whether an injection is required that day.
- On the days you have a blood test the nurses will, (unless otherwise organised), try to phone you between 2–3pm (12.30–1pm weekends and public holidays) to adjust the dose if necessary.

Treatment monitoring

The blood tests measure your hormone levels and the ultrasound measures ovarian follicle size and number. From this we assess your response to the hormonal stimulation. The ultrasound machine uses sound waves (like radar) to 'see' the follicles growing in the ovaries.

When placed in the vagina the ultrasound probe is less than 2cm from the ovaries allowing a very clear and detailed assessment. This should not cause any discomfort, does not require a full bladder and takes no more than 10 – 15 minutes depending upon the number of follicles to be measured. Generally large follicles yield better quality eggs but it must be remembered that not all follicles that are seen on the ultrasound have a retrievable egg.

From the assessment of blood and ultrasound results, we can decide the appropriate time for egg collection. Once the decision is made, arrangements will be made for you to have a trigger injection of hCG in the evening and the operation for egg collection will occur 36 – 38 hours later. This means you both get almost 2 days warning before the egg collection. After triggering, the FSH and Synarel (or Lucrin) are no longer required.

We have clinics and monitoring rooms across Sydney for your convenience in undertaking the blood and ultrasound monitoring. When you attend for registration visit discuss with the nurses your preferred location for your blood tests and ultrasounds.

- Nurses are available to answer any questions – the best time to call them is 11am – 1pm or make an appointment to see them late morning (after morning appointments and before afternoon calls to discuss your results.)
- On days when you have blood tests, unless otherwise arranged, the nurses will ring you with the results between 2–3pm (12.30–1.00pm on weekends and public holidays).

How eggs are collected

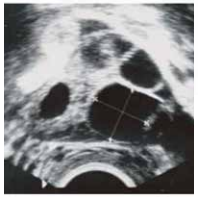
Day surgery/hospital admission

Our team will give you Admission Forms to fill out and these must be forwarded to the Hospital/Day Surgery prior to your admission day to streamline your admission when the time comes. They can also be faxed or posted. When you are admitted, remember your toiletries, tissues, pads, hospital insurance card and payment method (as all Day Surgery fees are payable on admission).

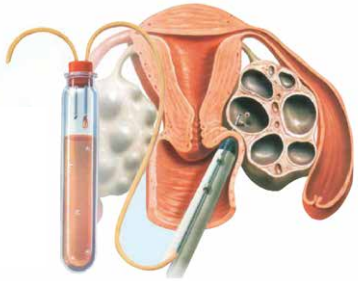
Note: There are no restrictions on sexual intercourse until the day we organise the triggering – and it is usual, although not medically necessary, to refrain until at least 3 days after your embryo transfer.

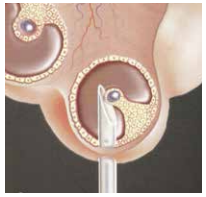
Operative procedures

It is important to remember that you should not eat or drink anything for at least 6 hours prior to the operation. In practical terms this usually means you should have nothing to eat or drink after midnight the night before. Egg collection is usually done under ultrasound guidance and most women prefer a light general anaesthetic. However, please discuss the egg collection options with your fertility specialist as it can be done under local anaesthesia, or mild sedation if you prefer.



Ultrasound view of stimulated ovary





Probe collecting egg from follicle in ovary

Using a vaginal ultrasound probe, the follicles are identified and the needle guided into them. The fluid in the follicles is then aspirated (sucked out) and immediately examined by the scientists who use a microscope to find the egg/s. The eggs are then taken to the laboratory for insemination (IVF or ICSI).

Following surgery the number of eggs collected is written inside your hand on a piece of tape so you will be aware as soon as you awake. Any unexpected or unusual findings will also be discussed with you by your fertility specialist. You will need to take vaginal progesterone pessaries following the egg collection and you will be given these by the nurses in the clinic prior to egg collection.

For many women there will be some discomfort afterwards, but this usually subsides by the next morning. You may also have minor vaginal bleeding over the next 24 hours but this is nothing to worry about. If, however, you experience excessive pain or bleeding please contact us.

You should be aware that many follicles are empty so there are rarely as many eggs collected as we see follicles on the ultrasound.

For men

On the day of egg collection you will be asked to deliver a fresh sample of semen to the scientists at our Laboratory at the Day Surgery/Hospital within one hour of collection.

The sample should be kept at body temperature, not heated or cooled. We will let you know the exact time it is needed at the laboratory when the final arrangements for admission are being organised in the days prior (we recommend avoiding ejaculation 2-5 days prior to your patner's egg collection). Do not leave your sample with anybody other than one of our scientists. Please label the container clearly with your name, date of birth and the name of your partner if you do not share the same family name.

If the collection of semen causes difficulties, please discuss it with us at the final consultation so we can organise alternative arrangements (e.g. special condoms, sperm freezing etc.). Sometimes, where there is either a blockage or severe deficiency in sperm production, it may be necessary to extract the sperm direct from the testis using a surgical sperm collection. This is normally performed under general anaesthetic but sometimes can be performed under local anaesthetic only.

Laboratory procedures

Egg fertilisation and embryo culture

Collected eggs are taken to the laboratory and placed in culture medium. They are examined (not all are equally mature or developed) and later that day the sperm, following preparation, is placed with them. You can choose to inseminate all suitable, or just a few eggs. It is important to understand that in classic IVF the prepared sperm and eggs are simply placed together in a dish where fertilisation then occurs.

For ICSI an individual sperm is selected and, under very delicate microscopic control, the egg, itself requiring extensive preparation, is injected with this single sperm.

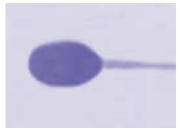
The day following IVF / ICSI the scientists will examine the eggs to determine if fertilisation has occurred. Our scientists will contact you to advise you of the embryos' development.

In some instances the scientist, in consultation with your fertility specialist, may recommend using the assisted hatching procedure. This is where the outer layer of the embryo (called the zona) is thinned by a laser to help the embryo implant more easily.

We routinely recommend blastocyst culture of all embryos (allowing the embryo to grow for 5 days in vitro before transfer) as our clinical evidence now clearly shows the chance of pregnancy following fresh blastocyst embryo transfer, is significantly higher than cleavage (day 2 or 3 old embryo) transfer. The exact timing of embryo transfer is NOT critical. The timing of transfer is dependent on your case and your specialist's advice. Any extra suitable embryos may be freeze-stored for later use.

Some embryos may have cells removed for special analysis (Pre-Implantation Genetic Diagnosis – PGD). PGD is the earliest form of prenatal diagnosis. It helps the selection of embryos that are not carrying rare genetic disorders previously identified in the parents. Due to the preparation phase required by the laboratory there may be some delay in starting treatment involving PGD. When required or requested genetic counselling and an additional brochure will be provided.

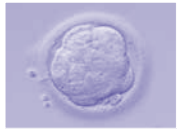

Egg

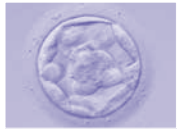

Sperm


Day 1 = Fertilisation


Day 2 = 4 cell


Day 3 = 8 cell


Day 4 = Morula


Day 5 = Blastocyst

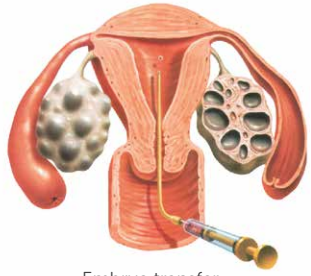

Hatching Blastocyst

Embryo transfer & what follows

The embryo transfer is a simple procedure that is performed in a day surgery/hospital. Partners are welcome to attend. We ask you not to wear perfume on the day as it interferes with embryo growth in the laboratory.

The embryos are transferred into the uterus through a very fine catheter passed through the cervix. It is normally similar to having a Pap smear.

How many embryos should I have transferred?


Embryo transfer

Our policy, consistent with professional guidelines, is to normally recommend transfer of only a SINGLE embryo at a time. You may, however, have the option of having two replaced and sometimes your fertility specialist will recommend this. We will never replace any more than two embryos.

The reason for normally recommending transfer of only a single embryo is that, in leading IVF clinics such as ours, high pregnancy rates can be achieved with transfer of only a single embryo. Transferring two rather than one does not significantly increase your chance of pregnancy, it only increases your risk of twins.

For most couples with a twin pregnancy, the pregnancy goes well and a very happy family is the result. However, sadly, twin pregnancies are at high risk of complications such as premature birth and this can have serious consequences for the health of the children. Problems such as cerebral palsy are up to five times more common in twins than in singleton babies.

Following embryo transfer you can be reassured that you can return to normal activities – including work, most leisure activities and intercourse as you feel comfortable. Contrary to myth, the embryos will not fall out when you stand up or walk around!

To keep your hormone levels suitable for the embryo(s) to implant, further treatment with progesterone gel (Crinone) is necessary during the 2 weeks before a pregnancy test can be performed. The choice and dose of medication will be determined by your hormone levels. Do not use a urinary pregnancy test kit, especially if you are having hormone injections, as they will give an incorrect reading that could result in subsequent disappointment. The only reliable pregnancy test is via a blood test.

Embryo freeze-storage

Any extra embryos that are not used during a treatment cycle, and are suitable for freezing, can be stored for up to five years. You can, if you wish, extend the storage beyond that time but you would both be required to sign a new consent form to do this.

It is important to note that not all couples will have extra embryos, or extra embryos that are suitable for freezing. Where there are extra embryos, the scientists will select only those that they think will survive the process. Even when they freeze the 'best', some embryos still do not survive. About 50% of treatment cycles do have more than two suitable embryos and these can be frozen. The National Perinatal Statistics Unit accumulates data on all pregnancies from ART and this shows that babies born after cryostorage are just as healthy as those from fresh embryos. The success rate per transfer attempt is usually around two thirds that of the 'fresh' attempts.

There are a number of aspects of storing frozen embryos with us that you should consider. What do you do if your family is complete and you still have embryos in storage? In that circumstance, you have a number of options:

- Allowing the storage of the embryos to be discontinued
- Donating the embryos to one of our research projects or elsewhere
- Donating the embryos to another couple

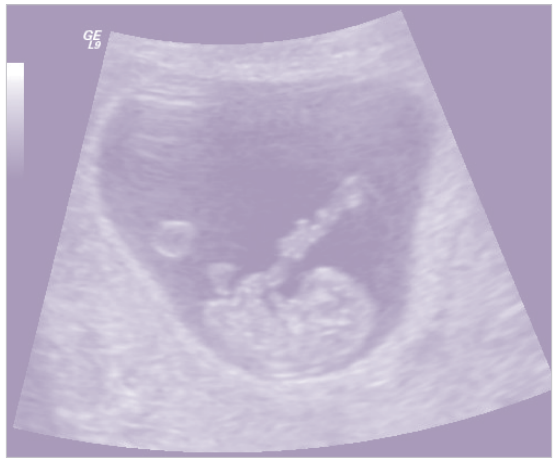
If this situation arises, you will be asked to give a separate written consent for whichever option you choose to follow at that time. Clearly the handling of excess embryos carries moral dilemmas for everyone involved.

If this is a serious concern to you, you can opt to limit the number of embryos created during the initial treatment cycle. We do not, normally recommend this approach as it could limit the chance of success from IVF but please discuss this option with your fertility specialist.

Ending the freeze-storage involves removing the embryos from the freezer and keeping them at room temperature until they are no longer alive.

What happens if there is a disagreement between a couple about the future use of their embryos? We will normally make the embryos available for treatment in response to a request from either partner. In the circumstance, that there is a disagreement between you, it is **your** responsibility to notify us in writing that there is a disagreement. Once notified of this, we would then place the embryos on hold and not release them for any purpose until either the disagreement is resolved or the end of the five year period of storage has been reached.

Pregnancy test



Pregnancy scan at 9 weeks

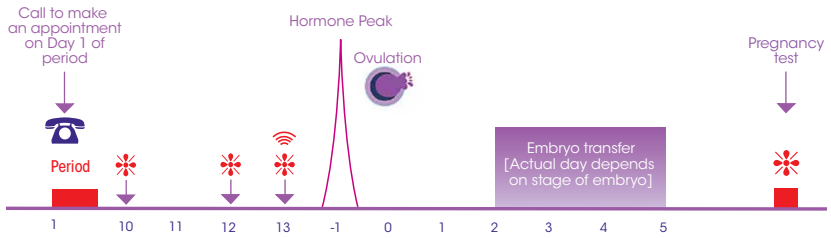
The nurses will organise an appointment for you to have a blood pregnancy test two weeks after the embryo transfer, whether your period has commenced or not. Occasionally women can have a period but still be pregnant; it is important that, we check the pregnancy test even if you are already bleeding.

The pregnancy test results are usually available by mid afternoon. If the pregnancy test is positive, we will arrange an ultrasound scan approximately three weeks later.

Frozen embryo cycle instructions

About 50% of treatment cycles have more than two suitable embryos for freezing, thereby reducing the need for repeated ovarian stimulation and further egg collections. Should the 'fresh' IVF/ICSI cycle not be successful, we normally suggest at least one complete cycle's rest before considering thawing the frozen embryos, and transferring them into the uterus. Most patients have their frozen embryos thawed and transferred within 6 months.

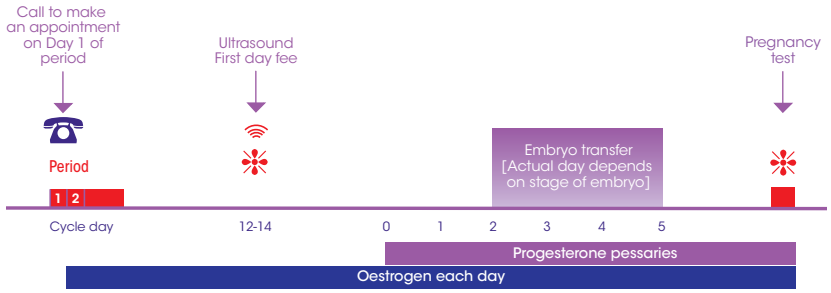
Frozen embryo cycles can be undertaken on your natural cycle, or using hormone preparation or ovulation induction. Not all embryos survive the freezing/thaw process, and we only transfer those that will offer you a chance of pregnancy. Within the first few days of proper established menstrual bleeding, telephone our nurses. Depending on your cycle pattern you may:



Natural cycle frozen embryo transfer

Arrangements will be made to commence hormonal monitoring by doing a blood test usually around day 11 of your cycle. The Frozen Cycle First Day Fee is also payable then. After the blood test, the nurses will organise for you to have daily blood tests or, in some cases for convenience (eg. long distances) give you a urine testing kit. This comes with instructions – you will need to test your urine each morning, until you notice the colour change. When the colour changes you should come in for a blood test. If you have not noticed a colour change by the fifth morning of urine testing, then you will need to have a blood test. Once we detect the necessary hormone changes we will then organise for the embryo transfer 2–5 days later (depending on the stage of embryo development at the time of freezing).

Hormone preparation frozen embryo transfer

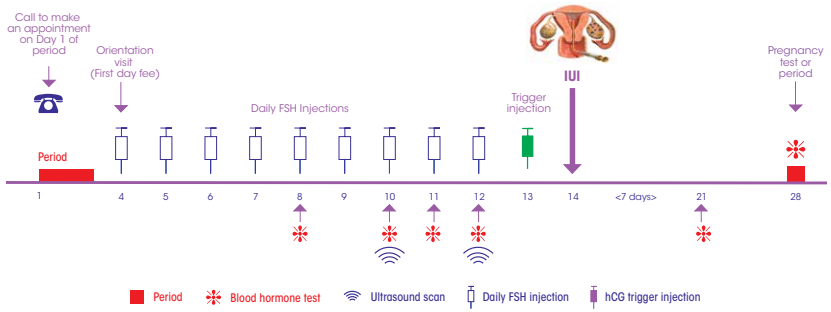


On the first day of your period you telephone the nurses and arrange to pick up the medication you will need. The Frozen Cycle First Day Fee is also payable then. On Day two of your cycle you will be asked to start taking a daily ethinylestradiol capsule, 30mcg for two days then increase the dose to 50mcg. We arrange an ultrasound and blood test appointment around day 12 to 14 to measure the lining of the uterus and measure your oestrogen levels.

At this time the nurses will tell you when to start inserting your progesterone pessaries (one twice a day) at the same time the dose of Ethinylestradiol drops back to 30mcg.

Usually after three to five days of pessaries you will have the embryo transfer. The pessaries and the Ethinylestradiol are continued until the pregnancy test, which is done about 14 days after the transfer. If you are pregnant, the medication needs to be continued for a further 8-10 weeks.

Ovulation induction frozen embryo transfer



On the first day of your period you telephone the nurses and arrange to pick up the medication you will need. On Day four of your cycle you will be asked to start taking a daily FSH injection. After about 4 injections the

nurses will organise for you to have your first blood test and from then ultrasounds and blood tests will be organised alternate days until the lining of your uterus is appropriate thickness and a dominant follicle is seen on ultrasound. At this time the nurse will advise you to administer the trigger injection and schedule the embryo transfer date. Your doctor may order other medications after ovulation for you, but this will be dependant upon your circumstances.

Embryo transfer

The embryo is thawed and cultured. You will need to attend the Day Surgery/Transfer Room for the embryo transfer, a procedure that is similar to a Pap smear as discussed earlier in this booklet.

Not all embryos survive the freezing/thaw process, and we only transfer those that are suitable and offer you a chance of pregnancy. The scientist will phone you when the embryo thaw is completed.

If your periods have not begun 14 days after the embryo transfer, we will arrange a blood pregnancy test. If hormone preparation is used you are not likely to bleed and an appointment will be made for a pregnancy test before any medication is stopped.

More detailed testing if a cycle is unsuccessful

A key benefit of being cared for by one of our fertility specialists is their access to one another for difficult or challenging cases such as repeated miscarriage or failure to fertilise. Our specialists meet regularly to discuss and manage these challenging cases and second opinions within our team are organised if necessary.

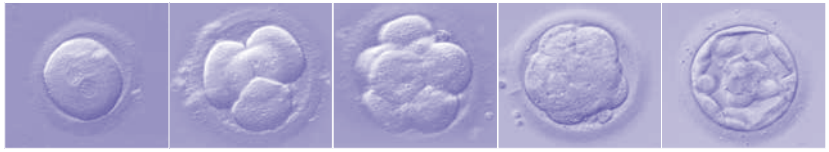
Your specialist may also suggest further assessment for example Natural Killer cell testing which involves a blood test or womb biopsy to aim to understand the affect of these cells on implantation.

Other advanced tests to ensure selection of the best egg, sperm and embryo may be required.

Treatment risks and considerations

Possible disappointments in an IVF cycle

Unfortunately not all IVF cycles are successful. We believe it is important that you are aware of the possible disappointments as well as the joys that IVF can bring. The following is a brief outline of where problems may arise.



Fertilisation	Day 2 Good Embryo	Day 3 Good Embryo	Day 4 Morula	Day 5 Embryo Blastocyst

Poor response to fertility drugs (approx 5% of cycles started)

In some cases, the ovaries do not respond well to the drugs and an insufficient number of eggs grow. This is detected by low, or a slow rise in, hormone levels or follicle growth as measured by blood tests and ultrasound. Setbacks at this stage teach us more about the hormone patterns and we may be able to amend the treatment plan for subsequent attempts. Cycles cancelled at this stage do NOT incur the full costs of IVF.

No eggs obtained at egg collection (approx 1% of egg collections)

It is important to note that the number of follicles seen on ultrasound does not always reflect the number of eggs collected at the time of surgery. Sometimes, for reasons that are not always clear, no eggs are collected at surgery. This can occur even where an ultrasound beforehand suggests good egg growth. If this occurs, we will perform a number of tests to find out why it has happened.

None of the eggs have fertilised (approximately 5% of egg collections)

On occasion, none of the eggs collected may fertilise. This is usually due to a problem of the egg and sperm binding together properly. When this occurs, our expert embryologists will study the eggs and sperm in detail to try and identify the cause of the problem.

Sometimes the fertilisation timing may be delayed, and eggs may not show signs of fertilisation at the expected time. Eggs that don't show signs of fertilisation initially can sometimes divide subsequently and as such will be kept to see if the insemination timing has been early or late, and embryo development to blastocyst stage occurs.

Usually, a special technique to inject the sperm directly into the egg (ICSI) can overcome the problem in a future cycle. However, it is important to remember that, even when ICSI is used, fertilisation and further division of the embryo does not always occur.

No embryo division

In some instances, not all embryos will continue to divide and grow throughout the laboratory incubation period following egg collection. This is more common in embryos grown to Blastocyst (Day 5 of incubation) because they need to continue to be strong enough to divide and grow outside the human body for a longer period of time. This may mean that some couples have no embryos available to transfer.

No additional embryos for freezing

It is important to note that not all couples will have extra embryos, or extra embryos that are suitable for freezing. Where there are extra embryos, the scientists will select only those that they think will survive the process. Even when they freeze the 'best', some embryos still do not survive. About 50% of treatment cycles do have more than two suitable embryos and these can be frozen.

Embryo transfer and still no pregnancy

If the cycle is not going to be successful, the embryo transfer is usually the point at which it will not work. Unfortunately, many embryos lack all the genes needed to develop fully and, despite a healthy appearance at the time of transfer, will not subsequently implant and develop.

Possible side effects of the IVF treatment

Ovarian Hyperstimulation Syndrome (OHSS)

This is a condition where women over-respond to the fertility drugs and can develop fluid retention and abdominal swelling. In 1% of cases, it can be severe and may require admission to hospital for medical treatment.

If OHSS does occur, it usually becomes evident 2 – 8 days after egg collection and subsides 2 – 3 weeks later if a pregnancy does not occur. However, up to 50% of cases are associated with a pregnancy, in which case the symptoms may be more prolonged and severe, the pregnancy hormone (hCG) being produced by the embryos worsening the symptoms.

The symptoms you should be aware of and report immediately to us are:

- Severe nausea and vomiting
- Increased abdominal bloating
- Diarrhoea
- Shortness of breath
- Increasing thirst
- Decreasing urine output

The mild form is usually adequately treated by rest, fluids and mild pain relief. More severe cases require hospitalisation with intravenous fluids and sometimes drainage of the fluid from the abdominal cavity. In over 250,000 treatment cycles in Australia, there have been no fatalities but in its severe form this condition can be life threatening and cases of significant blood clotting problems have occurred.

Complications of the egg collection

Ultrasound guided egg retrieval normally causes some discomfort during or after the procedure and this can last for two to three days. This is not normally a sign of serious problems. However, some serious complications can occur.

Infection: This occurs in less than 1 in a thousand cases. It is more common in women with previous pelvic disease such as blocked fallopian tubes or endometriosis but is still rare in this group.

Damage to other internal organs, including blood vessels, bladder and bowel: This is fortunately extremely rare although cases have been reported, both in Australia and overseas.

Remember that the complications listed are uncommon. However, if you are concerned, do not hesitate to contact us. Our on-call fertility specialists can be contacted for advice, 24 hours a day through your clinic.

Miscarriage

Assisted conception does not increase the risk of miscarriage. Miscarriage occurs in up to 25% of all pregnancies whether conceived naturally or by IVF. Light bleeding (or spotting) occurs in up to 55% of ART pregnancies and should not cause undue concern unless associated with increasing abdominal pain.

We organise an ultrasound a few weeks after the positive pregnancy test to check the pregnancy. Otherwise the pregnancy is like any other (although more hard won) and you should try to relax and enjoy it.

Occasionally increasing blood loss or pain will necessitate another ultrasound scan and ocassional blood tests. Very early miscarriage will not necessarily require curettage (D&C) but you should contact us or your local GP or Gynaecologist for advice if you are worried.

Should a curettage be required tissue analysis may occasionally give us an indication as to why the miscarriage occurred. In most cases however, we cannot give you a reason. We can do all of the necessary and justifiable testing through our laboratories. We warn you about some advertised, very expensive, poorly justified tests on offer. Miscarriage after ART is emotionally devastating – counselling is helpful at that time – just call.

Ectopic pregnancy

An ectopic pregnancy is one that implants outside the uterus, usually in the Fallopian tube. It occurs in approximately 1 – 4% of IVF pregnancies, usually only when there is pre-existing Fallopian tube damage. It is disappointing to note that ectopic pregnancies still occur even when embryos have been placed in the uterus.

The embryos move around for a few days before implanting and can sometimes lodge in damaged tubes. The signs of a possible ectopic pregnancy are abnormal hormone levels, brown vaginal bleeding and abdominal pain. Please advise us immediately if you have concerns. If you get severe pain you should proceed directly the nearest Hospital. Another alert signal to us is a positive blood test and an empty uterus at ultrasound.

A pregnancy in a Fallopian tube is often diagnosed by ultrasound. Surgical intervention may be required but if the diagnosis is made early enough, a special injection of drug can dissolve the pregnancy.

Multiple pregnancy

National figures in 2009 show twins occur in up to 8.1%, and triplets in less than 1%, of successful ART cycles.

While most multiple pregnancies end happily, there is nonetheless an increase in serious risks when the pregnancy is twins or above. The most common complication is premature birth which can cause problems for the future health of the babies – there is a threefold increase in the risk of a baby dying during or soon after the birth as well as a fourfold increase in the chances of cerebral palsy. As well as the medical complications, multiple births can impact on the family financially, socially and psychologically.

Multiple births associated with ART are caused by the transfer of more than one embryo. We normally recommend transfer of one embryo at a time. Your fertility specialist will discuss this with you. We will never transfer any more than two embryos at a time.

Remember that any extra embryos that are of good enough quality can be frozen so by having a single embryo transfer and freezing an extra embryo you are giving yourself the opportunity of a future pregnancy.

The health of a child conceived through IVF

The risk of health problems at birth or in the first year of life in children conceived naturally is approximately 4%. However, recent research, carried out in Western Australia and elsewhere, has suggested that, in children conceived after IVF, the risk of health problems at the time of birth is slightly higher at around 5 - 6%. This increase does not appear to affect any specific conditions. It is not clear why this small increase occurs. It may be related to the processes of creating a child through IVF. Alternatively, it is possible that men and women who find it difficult to conceive naturally, may already be at higher risk of having health problems in their children.

In addition, pregnancies conceived by IVF are slightly more likely to be complicated by conditions such as premature birth that may affect the health of the child.

At present, it does not seem that variations in IVF, such as sperm injection or embryo freezing have any specific effect on the child.

The available data do not currently suggest any long term effects on the child's health. IVF children have been shown to have normal intellectual and physical development and do not appear to be at higher risk of childhood illnesses. New research is, however, going on continually in this area and it is possible that these findings may change with time.

The health of the parents following IVF

There has been concern about the potential effects of fertility drugs on a woman's long term health.

Ovarian cancer occurs in approximately 1 in 90 women in the general community and is known to be more common in women who have not had children. Breast cancer occurs in 1 in 11 women, again being more common in women who have not had children.

However, it seems, at this stage, that IVF is unlikely to affect the risk of either of these conditions. The Australian cancer registers have not observed any increase in breast or ovarian cancer since the start of IVF treatments. In addition, a study from Monash University, published in 2001, which reviewed patients from 19 years earlier, confirmed no significant increase in risk.

The male partner is not free from concerns either. Testicular cancer is known to occur more commonly in men with low sperm counts and our fertility specialists advise all men with low sperm counts to have an ultrasound on their scrotum to check for any early signs of this.

Research to improve the outcomes from IVF

We aim to provide the best possible fertility care and success rates for our patients. To do this,we have established a research and development program to ensure that the very latest international developments in IVF can be rapidly translated to the care that we provide you.

We have the leading research program of any IVF clinic in New South Wales and have published many peer-reviewed papers in international journals. Our work is currently looking at a wide range of aspects of fertility problems and their treatment and, currently, includes the following projects:

- Ovarian cells & egg development
- Refining the treatments that we give our patients
- Developing new technologies to assist our patients
- Understanding the long-term consequences of infertility for our patients

The consent form that you sign before starting IVF asks you two questions:

- Are you willing to give your permission for the use of information from your file, for data analysis and research?
- Are you prepared to be contacted by us to seek your consent for involvement in other research projects?

We believe both of the above are important. Reviewing the outcomes from patients we have previously treated is an important part of refining the care that we can provide to future patients. It is also possible that we may need to contact you in the future to ask you if you would be willing to help with other research into the health of children and families after IVF.

In addition, we may approach you during your treatment to ask you if you would be willing to take part in a research project. Do remember that at all times you are completely free to say 'no' to participation in any research project. It is your care that comes first.

Privacy policy

At IVFAustralia our primary concern is providing you with treatment and healthcare of the highest quality. This requires a relationship of trust and confidentiality – one where we treat your personal health information appropriately and respect your privacy.

As such, we will handle your personal information in accordance with this Privacy Policy and in compliance with applicable privacy laws.

Our fertility specialists, nurses, scientists, counsellors and administration staff work together to provide your fertility treatment. They may need access to your personal health information to make sure we provide the most appropriate care.

You are entitled to know what personal information is held about you, how you can access it, why it is held, to whom we may disclose it, and when we need your consent to do this. This Policy explains all these details. You can discuss any issue relating to the privacy of your information with your doctor or any staff member, at any time.

Collecting information

Our fertility specialists and staff collect information that helps us provide the level of advice, care and management you need, or where there is a statutory requirement for collection.

This information may include:

- contact details and date of birth
- relationship status
- medical history
- family medical history
- symptoms, diagnosis and recommended treatment
- ethnicity
- Medicare/private health fund details
- billing or account details.

We normally collect this information directly from you, but we may need to get it from other sources – for example, from other medical practitioners, health funds or health providers and, with your consent, from family members.

Purposes for handling your information

To ensure we provide you with the most appropriate treatment, our fertility specialists and staff may collect, hold, use and disclose your personal information for any of the following purposes:

- sharing your information within the treatment team
- communicating with the referring medical practitioners
- referrals to other medical practitioners, hospitals or health providers
- referring specimens to external laboratories for analysis
- accounts & billing, including Medicare and private health insurance claims
- managing our practice – including quality assurance, practice accreditation and keeping our records up to date
- complaints and incident handling, and notifications to our insurers
- disclosure, where legally required, to third parties – for example, in response to a court subpoena or for mandatory reporting of specific diseases
- disclosure to our service providers, where doing so is necessary for your treatment or for our management and administrative purposes
- providing required information to the Director-General of the NSW Ministry of Health, including the name of any gamete donor and the identity of any baby born following gamete donation, to be kept in the central ART donor register, in compliance with regulatory requirements
- providing a small sample of case-notes for confidential review as part of annual Code of Practice audits by the national Reproductive Technology Accreditation Committee (RTAC), or its agents, in compliance with regulatory requirements
- in rare instances sharing your information with our clinical ethics review committee (which has members who are not part of IVFAustralia), if they need to determine whether your care meets our treatment guidelines
- submitting a de-identified summary to the Australia and New Zealand Assisted Reproduction Database (ANZARD) of every treatment we perform. This information may be further supplied to other government and statutory bodies, all in compliance with regulatory requirements. In all these cases we remove any information that personally identifies you.

We may also use non-identifying information from your medical file for data analysis and research.

If you request us to send materials related to your treatment to another country we will be required to disclose your personal information to people in that country.

The diagnosis and treatment of infertility often involves more than one person (for example, your partner, donors or surrogates). Where you are undergoing treatment with a partner, it is our policy to share all your information with your partner UNLESS you tell us not to disclose your information to your partner.

Data quality and security

We take all reasonable steps to ensure the personal information we collect, use, hold or disclose is accurate, complete, up-to-date and relevant to the functions and services we provide. You can help us achieve this by providing correct and up-to-date information, as described in our Patient Rights and Responsibilities document. When we exchange your personal information internally, we will do so via encrypted emails where possible. If you ask us to exchange your personal information with an external party, we may send your personal information by unencrypted (ie, normal) email to ensure that the external recipient can access this information.

We store your personal information securely and protect it from unauthorised access, modification or disclosure.

Access and correction

In all but a few rare cases, you can access the personal information we hold about you, in part or in full, or ask us to provide it to a third party such as another healthcare provider.

We may require you to make this request in writing. There may be an administration fee for this service, depending on the nature of access required.

If you feel any of the personal information we hold about you is inaccurate or incomplete, please let us know. It is our policy to note your corrections and add them to your records. In accordance with good clinical practice, we do not erase the original record.

Retention of records

To ensure we comply with regulatory requirements, we retain records relating to the use of donated gametes or embryos (including the identity of the donor, the recipient and any offspring born as a result of the donation) for a period of 50 years.

It is our policy to retain other medical records for a period of 25 years from the date of last treatment or the date of birth of any child born as a result of the treatment, whichever is the later. Personal information that does not form part of a medical record will be destroyed or de-identified once it is no longer required for the purpose for which it was collected.

Complaints

We want to make sure your expectations about your privacy protection are the same as ours. If you have any concerns, please discuss them with your doctor or any member of our staff. If, after this discussion, you still have concerns, you can contact our Privacy Officer at nswprivacyofficer@virtushealth.com.au

You may also complain to:

Privacy Commissioner
Office of the Australian Information Commissioner
Level 3, 175 Pitt Street Sydney 2000
GPO Box 5218 Sydney NSW 1042
Privacy hotline 1300 363 992
privacy.gov.au

or

Health Care Complaints Commission
Level 12, 323 Castlereagh Street Haymarket NSW 2000
Locked Mail Bag 18 Strawberry Hills NSW 2012
T: (02) 9219 7444
hccc.nsw.gov.au

Notes:

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IVFA09 Pathway of Care - 28.06.2022