



CANBERRA FERTILITY CENTRE

CANBERRA FERTILITY CENTRE

INFORMATION BOOKLET



www.canberrafertilitycentre.com.au

Canberra Fertility Centre

Patient Information Booklet

Mission Statement:

Canberra Fertility Centre is committed to providing the most technologically advanced Assisted Reproductive Technology services in a caring, supportive environment. Our mission is to offer every patient the very best chance for a successful pregnancy and healthy baby.

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Canberra Fertility Centre

Suite 9, Level 2
Clinical Services Building
John James Health Care Campus
Strickland Crescent
DEAKIN ACT 2600

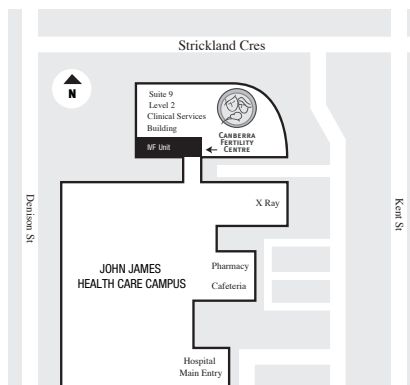
Postal Address: PO Box 228 Curtin ACT 2605
Telephone: 02 6282 5458
Facsimile: 02 6281 2087

Email: coordinator@cfcc.net.au

Website: www.canberrafertilitycentre.com.au

ABN: 4833 836 1486

Accreditation Status: NATA/RCPA AS4637 (ISO 15189) RTAC



Hours of Business

General Hours:

Monday to Friday: 7:30am to 4:00pm

Saturday and Public Holidays: 7:30am to 1:00pm

Sunday: closed

Blood Tests, Injection Assistance & Supplies:

Monday to Saturday: 7:30am to 9:00am.

Ultrasounds:

Monday to Friday 7:30am to 9:00am by appointment only.
(NB: no ultrasound services operate on Public Holidays).

Test results:

Monday to Friday 2:00pm to 3:00pm
Saturday and Public Holidays 12:00noon.

INTRODUCTION

For IVF/Infertility treatments you need to be referred to the Canberra Fertility Centre by one of the following specialist gynaecologists. You must maintain a current GP referral with this specialist gynaecologist for the duration of any treatment coordinated by the Canberra Fertility Centre. Prior to attending the Canberra Fertility Centre your specialist may organise some preliminary investigations. These will be organised through your specialist's rooms and they will tell you what is required. Your specialist gynaecologist will then plan and supervise all of your treatment through the Canberra Fertility Centre. Whenever possible, you will have procedures attended to by your own specialist, however for some parts of your treatment, it may be one of the other specialists who attends to your procedure on your own specialist's behalf (for example, a weekend roster of the specialists currently operates for embryo transfers).

Canberra Fertility Centre Specialist Gynaecologists
(Infertility Specialists)

Dr Martyn Stafford-Bell

(Medical Director)

FRCOG FRANZCOG

PO Box 228

CURTIN ACT 2605

Telephone: 02 6282 5458

Facsimile: 02 6281 2087

Dr Robert Armellin

(Clinical Director)

M.B. B.S. MRCOG FRANZCOG

Suite 10

Australian Surgeons Building

13 Napier Close DEAKIN ACT 2600

Telephone: 02 6285 1930

Facsimile: 02 6281 6410

Associate Professor Stephen Robson

BMedSc MBBS MM MPH MD FRANZCOG MRCOG

Suite 2

John James Medical Centre

175 Strickland Crescent DEAKIN ACT 2600

Telephone: 02 6282 3033

Facsimile: 02 6281 2899

Dr Bronwyn Devine

MB BS (Hons) FRANZCOG

Canberra Fertility Centre

PO Box 228

CURTIN ACT 2605

Telephone: 02 6253 3399

Facsimile: 02 6281 2087

Dr David P O'Rourke

MB BS (Syd) FRACGP FARGP FRANZCOG

Suite 10, 1st Floor

Australian Surgeons Building

13 Napier Close DEAKIN ACT 2600

Telephone: 02 6285 1930

Facsimile: 02 6281 6410

(Associates)

Dr Susie Close

M.B. B.S. FRANZCOG

Suite B9

Canberra Specialist Centre

161 Strickland Crescent

DEAKIN ACT 2600

Telephone: 02 6260 5822

Facsimile: 02 6260 3911

Dr Bish Mukerjee

FRCS FRCOG FRANZCOG

Suite B9

Canberra Specialist Centre

161 Strickland Crescent

DEAKIN ACT 2600

Telephone: 02 6285 1292

Facsimile: 02 6260 3911

Canberra Fertility Centre Support Staff

Nursing:

Vaunlea Morrison RN (Nurse Manager), Judy McColl RN, Jenny McGregor RN, Jenna Bowman RN, Delia Pell RM, Mary Pye EN.

Scientific:

Dr Chris Copeland BSc, PhD, (Scientific Director).

Kim Myssonski (Lab Manager), Kate MacKenzie BSc Hons, Nola Hile BSc, Sarah Rowsell BSc Hons, Wendy Copeland BPharm BEd, Carolyn Warren BRTC, Fiona Davey BSc.

Counselling:

Kim Riding BTh (Hons) BSn.

Sonographer:

Pam Craig.

Administration/Accounts:

Merran Aitken BRTC (Admin Manager).

Reception:

Linda Margules, Rebecca Dunn.

WHO NEEDS ART?

ART (ASSISTED REPRODUCTIVE TECHNOLOGY PROCEDURES)

It is a staggering fact that up to one in ten couples find that at some time during their life they need assistance to become pregnant. Not all couples need to embark on an IVF procedure. Many simply need to establish their fertile periods or have artificial insemination, or sometimes use hormonal support. Initially couples may seek the advice of their own GP, who may then refer them to the infertility specialists at the Canberra Fertility Centre.

In a natural pregnancy the oocyte (egg) and the sperm meet in the fallopian tube where fertilisation takes place and the resulting embryo implants in the uterine lining. But for those women with blocked fallopian tubes or whose tubes have been damaged by infection, surgery or endometriosis, the blockage is by-passed by IVF. The IVF procedure is also used with success where the male partner's sperm count is too low for normal fertilisation to occur.

Couples who have "idiopathic" or unexplained infertility, often find help from IVF programmes and other programmes to time ovulation so that intercourse can be undertaken at the optimum time.

Canberra Fertility Centre provides a comprehensive range of programmes for infertility including the following:

- In Vitro Fertilisation (IVF)
- Frozen Embryo Transfer (FET)
- Intra Cytoplasmic Sperm Injection (ICSI)
- Surgical Sperm Retrieval (SSR)
- Assisted Hatching (AH)
- Extended Culture of Embryos (Blastocyst Culture)
- Embryo Cryopreservation
- Oocyte Cryopreservation
- Oocyte Donation
- Embryo Donation
- Ovulation Monitoring
- Hormone Evaluation
- Semen Evaluation
- Infertility Counselling
- Intra-uterine Sperm Insemination (AIH)
- Donor Insemination (DI)
- Semen Storage
- Ultrasound Follicle Tracking
- 7 Week Pregnancy Scan
- Surrogacy

Patients will usually be referred to a Canberra Fertility Centre gynaecologist from either general practitioners or a gynaecologist for evaluation as to the best course of treatment under a fertility specialist.

During your treatment cycle you will meet a number of people who together, make up the team of professionals interested in your welfare. They are available for your support and care whilst you are undergoing the treatment, especially when it is not always possible to contact your doctor. If you have any problem that you wish to discuss about your treatment or need reassurance about a nagging question, do not hesitate to call Canberra Fertility Centre and discuss it with the Nurse Coordinator.

You should not hesitate to seek advice from the counsellor in dealing with such issues. We all acknowledge that undergoing treatment and placing all your hopes on one treatment cycle can be very stressful. A phone call can minimise some of this stress and can put your mind at ease.

Infertility is a highly emotional issue and is sometimes associated with frustration, anger and guilt. Despair and a lack of self esteem or confidence can be felt by the couple involved. To assist in coping with some of these issues and to discuss the impact the treatment will have on your life, you are welcome to meet with our counsellor before commencing a treatment cycle at Canberra Fertility Centre

There are some procedures which are physically invasive such as daily blood tests, the injections, ultrasound and of course an IVF oocyte pick up and embryo transfer, all of which takes a physical toll. Apart from the financial cost, there is the time factor which is often overlooked. Taking time off work for injections, tests and procedures often leaves employees in a quandary as to what to tell their employer. Most employers, if you feel that you can tell them, will treat your situation with sympathy and understanding.

There is also a book and video library. As a patient, you are welcome to use and borrow any item for a short period of time. Currently there is no charge for this service. The library forms a valuable source of reference information for couples who are interested in learning more about the procedures they are about to embark upon. For further details, please contact staff at the Canberra Fertility Centre.

Some treatments can be expensive. However, from statistical pregnancy rates particularly with IVF and GIFT, a minimum of 3–4 treatments should be considered to maximise your achievement of a successful outcome.

INFORMATION

In order for you to undertake any ART procedure, you must be fully aware of the options for treatment, the risks and side effects, the success rates and details of the procedures you are likely to undertake. Your specialist will discuss a treatment plan for your cycle and you will also attend an information session at the Canberra Fertility Centre to further consolidate your understanding of your treatment plan.

You will also be required to sign Consent Forms prior to each treatment cycle so that you and the Canberra Fertility Centre concur on the procedures to be undertaken. You may place any specific conditions into these Consents as long as they are within the Policies of Canberra Fertility Centre. You may also vary or withdraw from these Consents at any time prior to enacting the specified procedures.

All data concerning your procedure will be kept in strict confidence. From time to time non-identifying treatment data will be made available for studies into the long term effects of ART procedures.

PATIENT COOPERATION

Your cooperation in all aspects mentioned is vital to the success and smooth running of the program. **Please do not lose this information booklet** – it has been provided for instant reference. Further enquires regarding cycle management are best directed through the Nurse Coordinator.

PREPARING YOURSELVES FOR ART TREATMENT

Dramatic changes or alterations to your normal lifestyle are not recommended as they add unnecessary stress to what is already a very stressful time. However, it is recommended that you: endeavour to maintain a healthy lifestyle; maintain a sensible weight for your height and build; make modifications such as reducing your intake of alcohol to a social glass or so; and reduce the number of cigarettes smoked. Ideally you should quit smoking altogether.

Being conscious of a healthy diet and leading an active lifestyle will certainly enhance your achievement of a successful healthy pregnancy.

Ensure that you have immunity to rubella (German Measles). This is important whether you are undertaking ART procedures or attempting to become pregnant under natural conditions. All women planning a pregnancy should be taking a folic acid supplement. Increasing the intake of folic acid has been shown to reduce the risk of foetal abnormalities including neural tube defects. Your GP/Specialist can advise you on the dose recommended, but usually a supplement of at least 500 micrograms of folic acid a day is advised. This supplement should be continued for at least the first three months of pregnancy, where increased folic acid is needed by both the foetus and the mother.

Finally, the treatment programs that you may undertake will often be very confusing and you may feel, in some instances, out of control. It is essential that the period of your treatment remain as stress-free as possible for both partners. There is information available about yoga, meditation techniques, relaxation tapes and books from Canberra Fertility Centre for your use and our counsellor can also help you in this area.

Please make sure you ask if you have any questions – we are all here to help you in any way we can.

THE CANBERRA FERTILITY CENTRE

The Canberra Fertility Centre commenced operation in May of 1986 adjacent to the original theatre complex, now Opposite The CAPS Clinic. The Canberra Fertility Clinic is one of 40 fully accredited fertility centres in Australia and services a population of about 500,000 people in the ACT Region. The Canberra Fertility Centre is accredited with the two registered bodies in Australia – RTAC (Reproductive Technology Accreditation Committee) and NATA (National Association of Testing Authorities). The Canberra Fertility Centre provides a wide range of reproductive services including those listed on pages 3 and 4.

RESULTS

IVF/ICSI

The National Perinatal Statistics Unit (NPSU) correlates pregnancy rates for ART procedures carried out by all of Australian registered fertility clinics. The NPSU groups clinics in quartiles based on their performance. Pregnancy rates of around 30% can be expected. Indeed the Canberra Fertility Centre has been responsible for one of the highest pregnancy rates per oocyte collection procedure (once all frozen embryos have been transferred) in Australia.

These are probably more important statistics, as these convey to the patient their real chances of achieving the desired result, which is a live birth pregnancy. For IVF after six treatment cycles the cumulative pregnancy rate at the Canberra Fertility Centre is in excess of 60%. Again there is no National figure available but results compiled by Monash IVF (Victoria) in 1993 showed that the rate is of the order of 40% after six treatment cycles.

INSEMINATION

There are no National figures available for insemination but over the years the Canberra Fertility Centre has averaged a rate of 9.7% per cycle of treatment. This compares favourably with figures quoted by other major units of between 8 and 10% and cumulative rates of 30–60% after 6 treatment cycles.

OVULATION INDUCTION

Again there are no national figures but we have enjoyed pregnancy rates of between 10–22% per treatment cycle with a cumulative pregnancy rate of 70% after 10 treatment cycles.

LEGISLATION

The Parentage Act 2004 is the governing legislation covering Reproductive Medicine in the ACT and is restricted to detailing parental rights in cases of the use of donor sperm. It also provides the legislative backing to the surrogacy process. This legislation can be viewed at www.legislation.act.gov.au/a/2004-1/default.asp

There is no specific Federal legislation covering Reproductive Medicine, however, the prohibition of Human Cloning Act 2002 prohibits any attempt to clone a person or create clones of human tissue for the purposes of reproduction. The Research Involving Human Embryos Act 2002 regulates the use of human reproductive material (embryos) for purposes other than generating a pregnancy in a woman.

COUNSELLING

The Clinic's counsellor provides extensive counselling services. There is compulsory counselling prior to commencing IVF, for all gamete donors and recipients of donor gametes, and patients commencing surrogacy.

Please speak to the nurse coordinator or other staff members regarding the costs of these services as some of these costs are incorporated in the cost of the procedure.


ETHICS



The clinic operates under the guidance of an ethics committee. This committee is a seven person committee constituted in accordance with National Health & Medical Research Council guidelines. Ethical approval is sought from this body before commencing any new technique or when a change in policy occurs.

WEB SITE

We maintain a web site at www.canberrafertilitycentre.com.au. This site is updated regularly. Also an extensive range of fact sheets covering a wide range of fertility issues is available for download.

"Our success is your baby"



Home	Noticeboard	
Introduction	Help Brad & Nick?	Canberra Fertility Centre welcomes you to our clinic with the hope of fulfilling your wish to have a child of your own. We endeavour to provide you, our patient, with fertility treatment of international standards and excellence, within a very personal caring and supportive environment.
Causes of infertility	Brad & Nick are one of 10,000 Australian couples, wanting a family, who have no chance because Brad has no sperm.	
Treatment of infertility		
Information & fees downloads	Consider being a donor.	CANBERRA FERTILITY CENTRE
Surrogacy	> more	Suite 9, Level 2, Clinical Services Building John James Health Campus 173 Siriciance Creams DEAKIN ACT 2605 Telephone: 02 6282 5456 Fax: 02 6281 2087 Email: coordinator@cfcc.net.au
Newsletter downloads		
Statistics		
Latest news		
Location and hours		
Information sessions		

FEES AND HEALTH INSURANCE

FEES

The cost of preliminary investigations should be discussed with your specialist gynaecologist/GP. You will be provided with brochures outlining all fees associated with your ART Treatment cycle and these will be discussed at your initial information session at the Canberra Fertility Centre. The fee brochures clearly identify the total costs, relevant Medicare and Private Health Fund rebates, and Out-of-pocket expenses. A "Pre-Payment" system operates at the Canberra Fertility Centre where the expected Out-of-pocket cost for the treatment cycle services provided by your specialist and the Canberra Fertility Centre is paid at the commencement of the cycle to the Canberra Fertility Centre.

SAFETY NET

Medicare runs a Safety Net program for all Australian residents. This program was recently improved so that Medicare will rebate a portion of the total out-of-pocket medical expenses incurred by the patient – over a government nominated threshold in a single calendar year. Please contact Medicare on 132 011 for further details or consult the Medicare Australia website www.medicareaustralia.gov.au/yourhealth/our_services/suhc.htm. The Safety Net is subject to current government policy and may be changed at any time.

HEALTH INSURANCE

The most important information about health insurance and its relation to infertility tests and treatments is that you should "shop around", and compare different costs, requirements and payments. There is considerable variation between the funds and they also tend to change their policies fairly often.

It is very important to check out the rule about pre-existing conditions. Almost all private health insurance funds have a twelve month "pre-existing rule", which means that benefits will not be paid during the first year of membership for treatment for conditions which were known to have existed before joining the fund. Most of the major funds specify infertility and IVF treatment in their pre-existing conditions rules.

In addition to the pre-existing condition rule, some funds also apply waiting periods of up to three years before paying benefits for ART treatment (including antenatal treatment, confinement and neonatal services for a child born by IVF). Please be careful when taking out private health insurance for IVF treatment that you understand fully when benefits will be payable.

You can take out a Singles coverage, if only the woman is being treated. However, you may find difficulties should you become pregnant and want your baby privately insured. In this case you should take out family rate health insurance. Remember that the aim of most treatments is an ongoing pregnancy and that you may wish to have a higher cover for obstetric care.

In IVF treatment, there is no rebate from a private health fund for some services relating to nursing and technical services. Similarly, there is no rebate for donor sperm.

If you are not privately insured this does not preclude you from treatment. Some couples choose not to take out insurance as the cost of the insurance exceeds the annual rebate they can expect to obtain for their treatments. It is important to evaluate your long-term requirements when assessing private health insurance.

There are currently no private health fund rebates for tracking, ovulation induction, AIH/AID treatments, and for counselling services and counselling reports.

FERTILITY TESTS

The tests that may be carried out on a couple faced with a fertility problem are very dependent upon the couple's physical examination and medical history. The specialist gynaecologist and GP will decide which tests should be performed and in what sequence they should be done.

GENERAL BLOOD SCREENING

May include screening tests for thyroid function, prolactin levels, rubella immunity, blood group, and screening based on family history for any carrier disease status or chromosome analysis.

HORMONE ASSAY

The ability to measure levels of the hormones progesterone, oestrogen, prolactin, testosterone, follicle stimulating hormone (FSH) and luteinising hormone (LH) is a very valuable tool for investigation of infertility problems in both male and female.

HYSTEOSALPINGOGRAM

This X-Ray examination is used to check both the structure of the uterus and fallopian tubes. In order to show up the soft tissue a radio-opaque dye is injected through the cervix. A series of X-Ray pictures is then taken for later examination. The test enables the specialist to pinpoint the site of a tubal obstruction (if any) and to see any uterine defects that may be present.

ENDOMETRIAL BIOPSY OR DILATATION AND CURETTAGE (D & C)

This test involves the microscopic examination of a scraping from the endometrium – the lining of the womb. This enables an assessment to be made of the influence of the hormone progesterone on the endometrium.

LAPAROSCOPY

The purpose of the test is to allow the specialist to look at the ovaries, fallopian tubes, pelvis and uterus. The procedure is done under a general anaesthetic. The abdomen is first distended by blowing in carbon dioxide to ensure a certain amount of space exists between the organs. The laparoscope is then passed through a small incision in the abdominal wall near the navel. For diagnostic purposes dilatation and curettage or hysteroscopy may be performed at the same time as a laparoscopy.

SEMEN ANALYSIS OR SPERM COUNT

The sample produced is examined for the number of sperm present (a sperm count), the ability of the sperm to move (motility), the shape and appearance of the sperm (morphology), the total volume of the ejaculate, and the vitality of the sperm.

At this time the sperm may also be examined for sperm antibodies and the doctor may also confirm the findings by a blood test in both men and women. A referral to an urologist who specialises in male infertility investigation may be required.

POST-COITAL TEST (PCT)

This is the observation of sperm within the cervical mucus following intercourse. The test is a simple one, very similar to a smear test. Mucus is collected from the cervix and then examined microscopically to check if live sperm are penetrating the mucus and to assess the amount of motility. Cervical pH is another simple test that may be performed at the time of a post-coital test.

For further information on these tests contact your doctor or the Nurse Coordinator at Canberra Fertility Centre.

CYCLE MONITORING THROUGH THE CANBERRA FERTILITY CENTRE

Your specialist doctor may refer you to have menstrual cycle monitoring through the Canberra Fertility Centre including:

- Cycle tracking monitoring
- Ovulation Induction Monitoring
- Insemination Treatment (Partner or Donor Insemination) Monitoring

CYCLE TRACKING – DETECTING OVULATION

Ovulation is the release of a mature oocyte (egg) from the ovary. Usually only one oocyte is released per month. Oocytes are found in the ovaries in a very immature form and are not capable of being fertilised by a sperm. At the time of ovulation, they undergo a maturing process which culminates in their release from the ovary. The maturing of oocytes and ovulation is stimulated by two hormones secreted by the pituitary, a gland at the base of the brain. These hormones are follicle stimulating hormone (FSH) and luteinising hormone (LH). It is important these two hormones are produced in appropriate amounts throughout the monthly cycle for normal ovulation to occur.

A number of changes in blood hormone concentrations and the appearance of the ovaries in an ultrasound picture can provide strong evidence that ovulation will or has occurred. Ovulation is usually confirmed absolutely by a subsequent positive pregnancy test.

The female sex hormone oestrogen is produced by the cells surrounding a maturing oocyte within the ovary. As the oocyte matures more oestrogen is produced, reaching a peak level about two days before ovulation. If more than one oocyte matures simultaneously, the oestrogen produced by the ovary is greatly increased. Oestrogen levels can be measured in blood tests and its effects on the body are usually obvious, particularly on the amount and consistency of mucus discharged from the vagina. As the oestrogen level increases, the amount of mucus increases. This mucus is stringy and has the appearance and consistency of raw egg white.

As the oocyte matures a cyst called a follicle develops on the ovary. This follicle, which can be seen and measured on an ultrasound picture of the ovaries, may grow to about 2cm in diameter just before ovulation. Serial ultrasound pictures are another way of detecting ovulation.

Ovulation is triggered by a surge of Luteinising Hormone (LH) from the pituitary gland. LH also stimulates the ovary to begin producing the hormone progesterone. Progesterone is only produced in significant amounts after ovulation has occurred and can be measured in the blood. Progesterone changes the consistency of the vaginal mucus so that it becomes tacky or sticky. This hormone also causes a slight increase in body temperature.

In summary, ovulation may be detected by changes in the ultrasound measurement of follicle size, vaginal mucus, a small increase in body temperature or by changes in the amounts of oestrogen, LH and progesterone in the blood. The value of body temperature charts is limited because ovulation has already occurred by the time a temperature rise is recognised.

Ovulation usually occurs regularly, once a month from puberty until the menopause, apart from times of pregnancy and breast-feeding. In some women ovulation does not occur regularly, or may not occur spontaneously at all. This may be due to an abnormality with the ovaries, the pituitary gland or some other unrelated illness such as anorexia. A number of tests are necessary to determine the cause of this situation before appropriate treatment can be given.

OVULATION INDUCTION

If ovulation is not occurring regularly it may be necessary to give hormone tablets/injections to stimulate the ovaries. However, before these treatments are used it is important to find out why regular ovulation is not occurring, as more specialised treatment may be necessary for some women.

The most common treatments used include clomiphene citrate (trade name Clomid/ Serophene), or FSH (Follicle Stimulating Hormone). Clomiphene acts by interrupting the chain reaction of stimuli to the pituitary gland and allows more FSH and LH to be released. These hormones in turn stimulate the ovaries. Clomiphene tablets are usually given for five days commencing in the first few days of a monthly cycle and ovulation is expected to occur between five and ten days later. Some women notice they have less vaginal mucus while taking Clomiphene and may not be able to use this method to detect ovulation. The chance of multiple pregnancy after using clomiphene depends on the dose and your specialist will discuss this with you.

FSH and HCG are hormones that are given by injection. HCG is used to trigger ovulation when a mature oocyte has developed. It is used when it is thought that the rise in the LH has been insufficient. HCG injections are nearly always used when FSH is used. FSH stimulates the oocyte-maturing process and the development of the follicles on the ovaries, and is given each day from day 2 of the cycle. When the oestrogen level reaches its peak an ultrasound will be done and the HCG injection will be given as appropriate. When using FSH it is very important to monitor its effect by regular blood and ultrasound tests as this treatment is more likely to cause a multiple pregnancy. At the Canberra Fertility Centre FSH is given as either Gonal-F or Puregon and HCG is either Pregnyl or Ovidrel.

PARTNER INSEMINATION

Artificial Insemination (AIH) involves the insertion of semen obtained from the male partner, which has been washed and treated, into the cervix of the woman in order to achieve pregnancy. With lower sperm quality, insertion of sperm higher up the reproductive tract reduces the distance sperm have to swim to get to the oocyte. Insemination techniques are also used for couples whom have difficulties with sexual intercourse but potentially have normal sperm production, eg. anatomical problems, or if sperm penetration is considered hampered by cervical mucus (hostile mucus). It is estimated that hundreds of couples in Australia seek insemination treatment each year. Please note that Canberra Fertility Centre protocol states that an information session and signing of consent forms must be completed prior to commencement of treatment.

The success of AIH will depend upon several factors including other causes of infertility, the age of both partners, and the sperm parameters or abnormalities. If AIH treatment is going to be successful, most pregnancies will occur within the first six months of treatment.

INSEMINATION TREATMENT PROCEDURE

The woman attends the Canberra Fertility Centre for blood tests and ultrasound monitoring to ascertain the time of ovulation. Insemination is performed usually once, just prior to the time of ovulation.

Normally fresh semen is used for AIH. The male partner provides a sample of sperm at the Canberra Fertility Centre, which is prepared for treatment. A speculum is inserted into the vagina, as for a PAP smear, and a fine tube is passed into the cervix, through which the sperm is injected. Normally, the insemination procedure will be carried out by the nurse coordinator. The woman can then resume her normal activities after treatment (eg return to work). Blood tests are usually requested by her specialist to monitor the hormone changes in the second half of the cycle and to determine the outcome (of pregnancy).

If a pregnancy has not occurred within 3–6 insemination cycles, the treatment may be reviewed and sometimes the patient will be advised to take fertility drugs such as hormone tablets or daily injections.

If the male partner is out of town regularly it may be useful to have some of his sperm cryopreserved (frozen) at the Canberra Fertility Centre. The AIH treatment can then proceed on the days when the male partner is absent. The sperm is stored in "straws" in liquid nitrogen and thawed before insemination, then inserted as if using fresh semen.

DONOR INSEMINATION

Donor Insemination (AID) is the procedure whereby semen from an anonymous or known sperm donor is inserted into a woman's cervix/uterus with the intention of her becoming pregnant. Donor insemination may be used when the male partner is azoospermic (produces no sperm at all), or very oligospermic (very few sperm produced), or to avoid the transmission of hereditary disorders. Donor insemination treatment is also available for women without male partners. Please contact the Canberra Fertility Centre Sperm Bank Coordinator for further information.

INVITRO FERTILISATION (IVF)

Invitro Fertilisation (IVF) is the process by which oocytes are taken from the woman's body, fertilised in a laboratory with the sperm and incubated, then replaced into the woman's body a few days later for development. The basic stages involved in the IVF procedure are detailed below, but do not be surprised if the stages are slightly different to the procedure you follow. Everyone is an individual and the tests may differ or some stages may be added or not included in your treatment. This is designed to be an overview and lists the options available. You should discuss your treatment with your specialist and the Nurse Coordinator.

The IVF treatment involves six main stages:

- Growth and maturation of several oocytes.
- Exact timing of collection of these oocytes.
- The collection of the oocytes.
- Fertilisation of the oocytes that may become embryos.
- Transfer of the embryo/s back into the uterus.
- Freezing of remaining suitable embryos.

MEDICATIONS USED IN OVARIAN STIMULATION

The normal cycle usually produces one oocyte but fertility drugs are used to hyperstimulate the ovaries to develop a number of oocytes in the IVF cycle. Pregnancy rates in IVF are improved if a number of oocytes can be collected. Follicle Stimulating Hormone is the most common method of stimulating follicular development. PUREGON and GONAL-F are synthetic forms of Follicle Stimulating Hormone (FSH) and your specialist will prescribe one of these medications to stimulate the ovaries to produce many oocytes. Some patients may be treated with FSH only, but most patients will also use Lucrin, Synarel, Cetrotide or Orgalutran in conjunction with the FSH injections. Lucrin and Synarel are both GnRH agonists and Cetrotide and Orgalutran are GnRH antagonists. These four medications act on the pituitary gland to stop ovulation occurring before the oocyte collection in an IVF cycle. Individual instructions will be given to you.

Currently Medicare supplies the FSH if you are eligible for Medicare rebate. Please discuss the cost of Cetrotide or Orgalutran before commencing.

Injections (Lucrin, Puregon, Orgalutran, Cetrotide and Gonal-F) can be conveniently self-administered at home by yourself or your partner. The nurse coordinator will give you and your partner instructions and a teaching session/s. You will be supervised at the clinic until you feel confident to self-administer at home. Synarel nasal spray is conveniently given at home and an instruction sheet is available.

OVARIAN STIMULATION PROTOCOLS

There are almost as many stimulation protocols in use in the world as there are IVF clinics. The most common protocol used by our clinic is the Down Regulation Protocol and it is very similar to that used by most IVF units around Australia. Others used include Flare Protocol using GnRH (Synarel/Lucrin), Flare Protocol using Orgalutran and combination protocols. Your specialist will advise you which protocol he/she believes will provide the optimum result.

OVERVIEW OF THE DOWN REGULATION PROTOCOL

In this protocol blood tests are attended, to determine the day of ovulation (as indicated by A on the time line in Figure 1). Lucrin or Synarel (GnRH) is commenced 7 days after ovulation (as indicated by B on the time line). Lucrin or Synarel is continued daily for 10 days then a blood test is performed to check that the hormone levels are at baseline (as indicated by C on the time line). If a baseline has not been reached, then Lucrin or Synarel is continued for a further three to five days. A blood test is performed again to test for baseline levels. This is repeated every 3–5 days until baseline levels have been achieved. Once achieved the stimulation drug (Puregon or Gonal F) also known as the Follicle Stimulating Hormone (FSH) injection is commenced (as indicated by D on the time line) and is used concurrently with the GnRH.

MONITORING OOCYTE DEVELOPMENT

The oocytes develop inside the ovaries in follicles, which are like little cysts or fluid filled sacs. These follicles produce increasing amounts of oestradiol (an oestrogen hormone) as they grow. The size can be measured by ultrasound, although the oocytes themselves are much too small to see. A blood test and ultrasound scan will be done on about the seventh day after commencing FSH (as indicated by E on the time line). Thereafter blood tests and ultrasound scans will be attended usually every 2–3 days (as indicated by F on the time line). When you contact the Canberra Fertility Centre that same afternoon, you will be informed when another scan or a blood test is required.

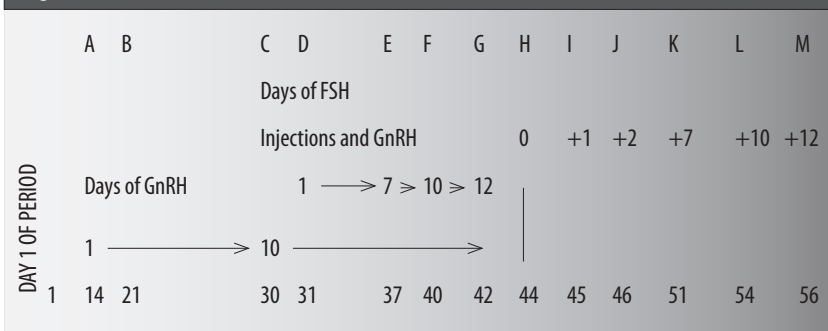
IVF START TO FINISH

a) Blood Tests

Blood is taken at intervals from about Day 7 of the stimulated cycle to measure oestradiol levels. Blood samples must be taken at the Canberra Fertility Centre between 7.30am and 9.00am so that the results are available the same day.

b) Ultrasound Examinations

Patients will have ultrasound examinations to measure the size, number and development of follicles growing. Ultrasounds are performed trans-vaginally and an empty bladder is required. Sound waves are used to produce pictures of the growing follicles, so that they may be counted and measured. The number of oocytes collected may differ from the number of follicles seen on ultrasound. These scans are done at Canberra Fertility Centre between 7.30am and 9.00am weekdays by appointment.

Figure 1

ADMISSION TO THEATRE

Theatre admission will be arranged prior to oocyte pick-up. Nil by mouth (fasting) for a minimum of six hours prior to procedure. You are to remain at the facility for about 2 hours after oocyte pick-up for recovery from the anaesthetic/sedation used during surgery.

TIMING OF OOCYTE PICK-UP

The oocyte pick up will be undertaken using laparoscopy or an ultrasound guided pickup. Your specialist will advise you as to which method will be best for you. The oestradiol levels (from the blood tests) and the number and the size of the follicles (from the ultrasound) are together used to assess the maturity of the oocytes and the right time for oocyte collection. There is no "correct" oestradiol level to reach and there is enormous variation between patients. It is the whole pattern of blood and ultrasound results, and patient history which determine whether the response to treatment is optimum. In general, however, it is important that the oestradiol level rises steadily until the oocytes are collected. It is very important to realise that a wide range of individual treatments are used in the program. Please do not be alarmed if your treatment is different from someone else's. The aim is to design the best individual protocol for you. For patients who are not using Lucrin, Synarel, or Orgalutran, the hormone that normally triggers ovulation; LH, may be present and its levels are not under your specialist's control. If it is detected, oocyte pick-up must be timed according to the results of the blood tests.

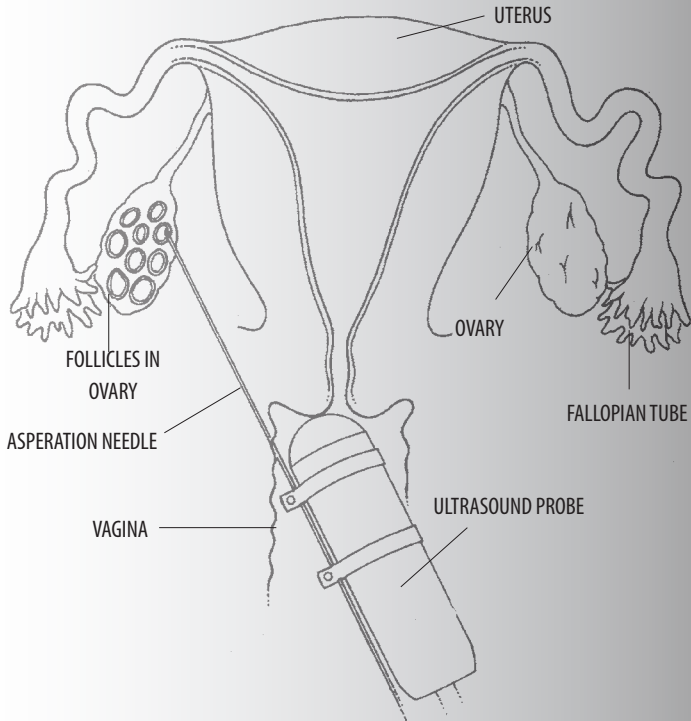
hCG INJECTIONS (Trigger Injection)

hCG (human chorionic gonadotrophin) is a hormone that performs the function of LH, triggering the final maturation of the eggs and ovulation. In an IVF cycle. An injection of hCG medication (Pregnyl or Ovidrel) is given usually 37 hours before the oocyte pick up (OPU) is planned (as indicated by G in the time line). Your OPU time is determined by the oestradiol level and the ultrasound measurement. After this trigger injection the other medications (Lucrin / Synarel / Puregon / Gonal-F) are normally stopped.

OOCYTE PICK-UP (OPU – EGG COLLECTION)

Oocyte collection indicated as H in time line. The oocyte collection is done under a "light" anaesthetic/sedation. The follicles are visualised using trans-vaginal ultrasound, and the fluid inside them is sucked through a needle and tubing into a test tube. The tube is passed immediately to the embryologist who looks for the oocyte under the microscope. The oocytes are then put in the incubator. Most patients are sleepy, and some are nauseated for a few hours after the procedure. You can be discharged 1 ½ hours after the procedure. The Nurse Coordinator will give further instructions before you go home.

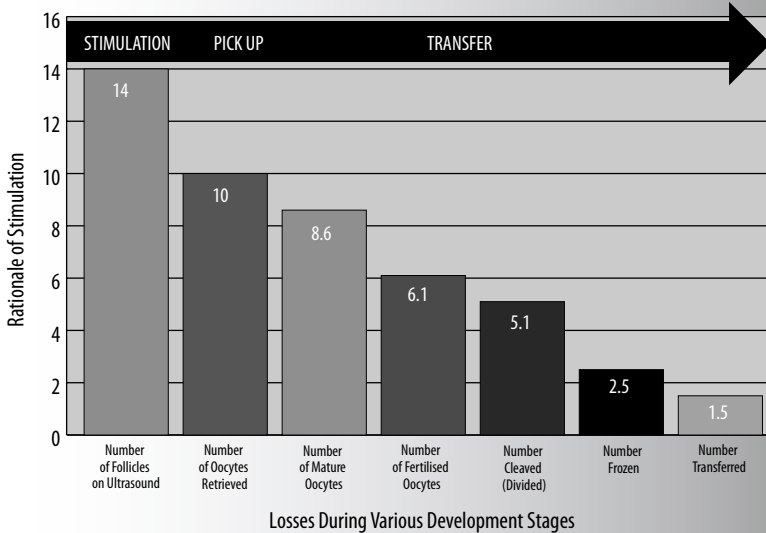
Oocyte Collection



FATE OF RECOVERED OOCYTES

It is important to understand that not every follicle seen on ultrasound yields an oocyte. The following chart shows the average fate of follicles from ultrasound to embryo transfer. Only 71% of follicles yield oocytes and only 28% (less than a third) of follicles normally yield usable material.

Fate of Follicles (Averages)



NO OOCYTES COLLECTED

This occasionally happens, and can occur where there is no access to the ovary (very rare), where ovulation has unexpectedly occurred prior to the oocyte collection procedure or there are no oocytes obtained from the follicles. The latter is called Empty Follicle Syndrome (EFS) and is a frustrating condition in which no oocytes are retrieved at pick-up, even though ultrasound and oestradiol measurements showed the presence of potential follicles. The mechanism responsible for EFS remains obscure. Many hypotheses have been put forward but none truly explain the syndrome. EFS is an infrequent event and has been estimated to occur in 2–7% of IVF cycles. However, the overall risk of recurrence in a later IVF cycle is 20% and the risk of recurrence is higher as the age of the patient increases.

If an EFS cycle does occur please make sure you discuss it thoroughly with your specialist and the clinic counsellor.

SPERM COLLECTION

We will inform you of the sperm collection time when the oocyte collection time has been arranged. It is usually 1-3 hours before, or at the same time as the procedure. Two to three days abstinence from intercourse/masturbation is preferred prior to oocyte pick-up. The sperm sample is produced by masturbation at the Centre or by other means by arrangement. There is a room for this purpose. You are asked to wash your hands beforehand to minimise the chance of contamination. Lubricants are NOT to be used. It can be very difficult for some men to produce a sperm sample

on request under these conditions. If you are worried about this aspect of the program, please discuss it with us at or before the start of the treatment cycle, so that arrangements can be made to freeze some semen if necessary as freezing must be done at least a week before oocyte collection. Sexual activity may be continued as usual whilst on injections. Sexual activity may resume 48hrs after the embryos are transferred if comfort levels allow. It is ideal for the male partner to ejaculate the night of the trigger injection, to ensure a fresh ejaculate of sperm on the day of the oocyte collection.

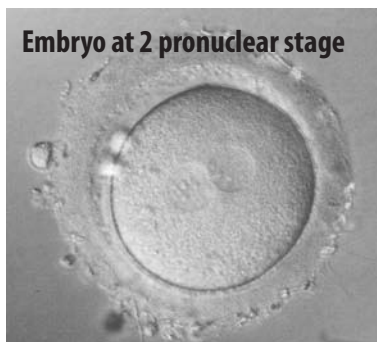
EVENTS IN THE LABORATORY

The sperm sample is prepared and added to the oocytes (fertilisation), 3-6 hours after collection. The oocytes and sperm are kept in an incubator until next inspected 15–20 hours later as indicated as l on timeline in Figure 1. At this time they are checked under the microscope to determine whether fertilisation has occurred. You will be in contact with the Nurse Coordinator during these interim days and they will inform you of the fertilisation results and embryo progress results. At about 40–60 hours after fertilisation, the embryos will be transferred to the uterus. As indicated as j on the timeline.

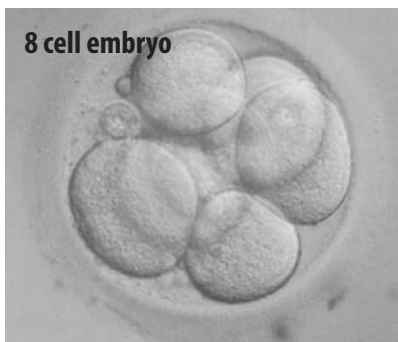
Oocyte surrounded by Sperm



Embryo at 2 pronuclear stage



8 cell embryo



NO FERTILISATION

This happens in about 5% of patients who have oocytes collected. Sometimes it is because of known problems such as low sperm count, sometimes because of unpredicted problems with oocytes or sperm, and occasionally there is no obvious reason. This will be discussed with you and usually an appointment will be made to further review the situation and make future plans.

EMBRYO TRANSFER

We will inform you of progress daily. Transfer usually takes place around 2–3 days after oocyte pick-up. Indicated as J on the timeline. The embryo transfer is carried out in the IVF Unit. Because of the risk of multiple pregnancies if you are under the age of 35 and this is your first attempt at IVF, then only one embryo is replaced. Please discuss this with your doctor and the coordinating nurse. There is a handout entitled “How many embryos should I have transferred” that discuss this recommendation. No anaesthetic is required and the procedure itself takes approximately 3 minutes. The Specialist will insert a speculum into the vagina, as for a Pap smear. This allows a view of the cervix. A fine tube (catheter) is passed through the cervix and up into the uterus. The embryos are then injected using a fine inner catheter high into the uterus in a minute amount of culture medium. This technique does not normally require sedation, and may be a little uncomfortable but not painful.

You are then requested to do light duties only, and if possible, avoid strenuous work or activities. Menstruation does not necessarily mean that a pregnancy is not developing. You must continue blood tests until a final outcome is known.

NUMBER OF EMBRYOS TO BE TRANSFERRED

There is now clear evidence from Europe and Scandinavia that the transfer of a single embryo on the first and possibly second treatment cycle in patients under the age of 35 years, results in an overall reduction of pregnancy rates of around 5%. However, it does reduce the instance of twins to less than 1% and one must remember that in a twin pregnancy the incidence of miscarriage, premature delivery, death from prematurity and long term disability, including cerebral palsy, as a result of prematurity is greatly increased. This is even more so in identical twins which will be discussed later.

The data for continued transfer of a single embryo after the first or second cycle is not clear. Therefore, after one or possibly two failed single embryo transfers the patient should consider having two embryos transferred.

WHICH DAY TO TRANSFER EMBRYOS?

It is clear that there is no difference in the pregnancy rates between transferring embryos either two days or three days after oocyte collection. In spontaneous conception the embryo enters the uterus four or five days after ovulation at what is called blastocyst stage. It would therefore appear logical to transfer embryos when they reach that particular stage, which in IVF, is 5 days after oocyte collection.

The possible advantage of Blastocyst transfer is to achieve a pregnancy with fewer cycles, than transfer of day 2 or day 3. However, this requires that there be at least 4 good quality embryos available to culture up to day 5.

Blastocysts do not tolerate the freeze/thaw process as well as embryos frozen on day 2 or day 3. The culture of the embryos to the blastocyst stage may mean only one realistic attempt at pregnancy, whereas a transfer on day 2 or day 3 would allow freezing of embryos carrying a better chance of subsequent pregnancy, should a fresh transfer fail. While there is ample data available from the long term follow-up of children born as a result of IVF and ICSI, such data for babies born as a result of blastocyst transfer does not exist because blastocyst transfer is a relatively new development.

Transfer of a single blastocyst reduces the twin rate to around 1%. However, there is a relative increase in the incidence of identical twins who may suffer even higher rates of miscarriage, foetal abnormality, prematurity, death from prematurity, cerebral palsy and long term disability than non-identical twins

VITRIFICATION

We are still searching for the ideal way to freeze embryos. Techniques have improved but are not yet perfect. The latest suggested technique for freezing embryos, particularly blastocysts, is known as Vitrification. The small amount of data available at the moment on pregnancy rates following the thawing and transfer of blastocysts that have been frozen by Vitrification is encouraging. However, the agent used in Vitrification is dimethylsulphoxide (DMSO) and was the original agent used in embryo freezing which was withdrawn from use because it is highly toxic. The suggestion that it is entirely safe for use in Vitrification because Vitrification is a different technique, has yet to be proven. We are watching developments in this area very carefully but we do not intend to use a technique until we have at least reasonable belief in its safety

We recommend that you discuss all of these issues with your treating doctor.

FOLLOW-UP TESTS

Blood tests may be done at frequent intervals to monitor progesterone levels and determine the cycle outcome. To maintain your progesterone levels after IVF progesterone support is often prescribed and is routinely given as a Vaginal Pessary or gel. The Nurse Coordinator will instruct you on their use. A series of blood tests for progesterone and pregnancy hormone will be carried out (often 7, 10, and 12 days post egg collection, indicated as KL & M on timeline Figure 1). If the tests do not indicate that pregnancy has occurred within this time then the progesterone support will be stopped. A menstrual period can be expected within a few days of cessation of progesterone support.

PREGNANCY

The blood tests taken two weeks after the egg collection will detect whether the pregnancy hormone (HCG) is present: however it is too early to know whether there is a healthy continuing pregnancy. Further blood tests and an ultrasound examination are needed. Your specialist usually orders an ultrasound at approximately 7 weeks of

pregnancy, and antenatal visits with your specialist commence at 12-16 weeks of pregnancy but call and book at 5 weeks of pregnancy. Please refer to your specialist and the Canberra Fertility Centre for instructions. Unfortunately IVF, like natural conception, can lead to a biochemical pregnancy (a transient rise in pregnancy hormone followed by a late period), miscarriage (possibly needing curettage), or an ectopic (tubal) pregnancy (requiring surgery), as well as the happier outcomes.

So, unfortunately even a positive blood test is not the end of the waiting. Multiple pregnancy (twins or triplets) are more common with IVF than with natural conception, because of the practice of transferring more than one embryo. If you do not want to risk having twins or triplets please discuss with your doctor the replacement of only one embryo in an attempt to reduce this risk.

UNSUCCESSFUL CYCLES

If your cycle has been unsuccessful we recommend you contact your specialist for a review of your treatment.

REPEAT IN-VITRO FERTILISATION ATTEMPTS

No pregnancy resulting after an embryo transfer is still the most common outcome of IVF and reflects our current state of knowledge. We are continually working to find what is different about pregnancy cycles so that the outcomes may be improved. Often, we will be unable to give a reason why the embryo transfer has failed.

If pregnancy does not occur, a cycle to transfer frozen embryos or a repeat attempt of IVF can usually be made approximately 2 months later, depending on findings of the most recent treatment cycle. Make an appointment to see your gynaecologist after your period for review and a new treatment plan for your next cycle.

CANCELLATION OF CYCLES

Hormone levels (Oestradiol) from the blood tests and follicle numbers from the ultrasound scan will be used to assess the progress of the cycle. The aim is to collect between 6 and 10 oocytes. If your blood hormone levels and follicle numbers are too high, your Specialist may decide that your cycle be cancelled to avoid the risk of OHSS (Ovarian Hyperstimulation Syndrome). The Nurse Coordinator will explain this risk to you. This is only a temporary setback. Similarly if the blood hormone levels and ultrasound measurements show that insufficient follicles are growing then your Specialist may also decide that the cycle be cancelled. A cycle may also be cancelled if follicles develop on an inaccessible ovary (eg. follicles developing on the wrong side when scar tissue allows only one ovary to be accessible) or if ovarian cysts impede the cycle.

Cycle cancellation occurs in about one in seven cycles. In the majority of cases, this is just a reflection of the variation in the biological system and a more satisfactory response is obtained in the next cycle attempt, possibly using a different drug dose or protocol. Rarely an industrial dispute or other circumstances beyond our control could result in a cycle being cancelled.

REQUIREMENTS FOR COMMENCING AN IVF CYCLE

INFORMATION SESSION FOR IVF

Your specialist will ask you to make an appointment with the Counsellor/Coordinator at the Canberra Fertility Centre. Allow approximately one hour for this appointment, and both partners are required to attend. You **must** have seen your specialist gynaecologist prior to this information session, and a letter/cycle plan for IVF treatment must have been received at the Canberra Fertility Centre prior to your appointment day. This enables the Coordinator/Counsellor to discuss the specific plan for IVF that you and your specialist have decided upon. You will also be provided with brochures explaining the fees involved.

BLOOD SCREENS

Blood Screens for Hepatitis B & C, and HIV status are required for both partners, and these results need to be within twelve months of the expected procedure date. You will need to obtain the pathology request forms from your specialist. These three tests need to be repeated every 12 months if treatment is being undertaken.

SEMEN ANALYSIS

Semen Survival/Semen Analysis for the male partner needs to be completed at least two weeks prior to the initial information session if your specialist has not previously ordered this test. Please make an appointment at the Canberra Fertility Centre. Closer to the start of the IVF cycle, a sample of semen also needs to be culture tested and this semen culture must be repeated each cycle. You will be advised of the timing of this test at the initial information session.

CONSENT FORMS

IVF Request/Consent forms and Admission papers are completed at a "paper signing/consents" appointment. Both partners are required to attend this appointment, which takes approximately 30–45 minutes and needs to be attended at least 2 weeks prior to commencing an IVF cycle. The Nurse Coordinator/Counsellor will book a time for you at the initial information session. Request/Consent forms need to be signed for each IVF related procedure and will need to be repeated each cycle.

MANAGEMENT OF THE FROZEN EMBRYO TRANSFER (FET) TREATMENT CYCLE

FREEZING OF EMBRYOS

Canberra Fertility Centre has been freezing embryos since 1986, and their subsequent transfer has resulted in the birth of many healthy babies. There is no increase of abnormalities in children born from frozen embryos, than those from 'fresh' embryos. Embryos can be frozen after 24, 48 or 72 hours in culture and also at blastocyst stage. Consent forms are signed relating to the "ownership" of the embryos in the event of death/divorce etc and any disputes are directed to the Commissioner of Health and/or Ethics Committee.

MANAGEMENT OF THE FET TREATMENT CYCLE

You need to contact your specialist gynaecologist to organise a cycle plan to be sent to the Canberra Fertility Centre for your FET cycle. They may require you to have an appointment with them to discuss this plan prior to commencing. You will also need to make a booking for an FET cycle, so please check with the Nurse Coordinator in advance. Please telephone the Canberra Fertility Centre approximately a fortnight before your cycle to arrange a time to sign consent forms, as we will not thaw any of your embryos without your written consent. One of these consents must be signed for each transfer cycle. It is also necessary for you to pay the appropriate prepayment before you begin your FET cycle.

The frozen embryo transfer cycle is relatively non-invasive compared to an oocyte collection cycle. The embryos can be replaced either in a natural cycle or in a medicated cycle depending on whether we can easily monitor the time of natural ovulation. We aim to transfer the embryos into your uterus at the correct time in relation to ovulation and the thickness of the lining of your uterus (endometrium).

In a "natural" FET cycle (where no medications are used before the embryo transfer), or where Follicle Stimulating Hormone injections or Clomiphene are used the cycle is tracked for ovulation using blood tests to monitor the hormone levels. As ovulation draws near an ultrasound will be requested to measure the thickness and maturity of the endometrium. If this is suitable, the embryo transfer will be performed 2–3 days after ovulation.

In a "controlled" FET cycle, Progynova (oestrogen) tablets are administered in order to prepare the endometrium for implantation. The development of the endometrium is monitored by ultrasound scanning (approximately 1–2 scans). The first ultrasound is usually performed on day 10–12. When the endometrium is thick enough and of the right maturity, the embryos will be thawed for transfer. Progesterone pessaries are used in conjunction with Progynova to maintain the endometrium, and these medications need to be continued often for the first trimester of a pregnancy.

THAWING YOUR EMBRYOS

The embryologist will thaw your embryos so that the age of the embryos corresponds to the maturity of your uterine lining. The exact timing will depend upon the stage at which the embryos were frozen. You are asked to ring the day before your embryo transfer to check the time that the procedure is booked. Not all embryos survive the freezing, storage and thawing process. You will be notified by the Nurse Coordinator/Specialist if there is a problem.

EMBRYO TRANSFER PROCEDURE

The embryo transfer procedure and follow-up tests are the same as for IVF embryo transfer, described previously.

THE SUCCESS RATE OF AN FET CYCLE

The success rate using frozen embryos is 20%. The pregnancy rate will depend on the number and quality of embryos transferred, your age and your cause of infertility.

If you decide you no longer wish to have your frozen embryos kept for yourselves you may have the choice of donating them or having them disposed of. A combination of these choices is also available. If they have not been used after 5 years then the Canberra Fertility Centre will contact you to ask your intentions. Please ensure your contact details are kept up to date.

OTHER TECHNIQUES THAT MAY BE ASSOCIATED WITH AN IVF CYCLE

INTRACYTOPLASMIC SPERM INJECTION (ICSI)

WHAT IS ICSI?

This successful technique was introduced by a Belgian group in 1992. It is designed for use in men whose sperm quality makes a spontaneous pregnancy and pregnancy with conventional IVF extremely unlikely, and also for couples where the oocytes have failed to fertilise on conventional IVF. This technique has resulted in pregnancy rates similar to those achieved in routine IVF where men have normal semen samples.

It is logical to assume, therefore, that ICSI applied to all IVF treatment cycles may improve pregnancy rates further in couples where the sperm picture is normal. There is now firm evidence showing the use of this technique does not improve pregnancy rates where there is a normal sperm picture but may actually reduce the chance of success. ICSI therefore is an expensive procedure which must be used appropriately.



WHO CONSIDERS ICSI?

ICSI is used when there are problems with the sperm that would make it impossible to achieve fertilisation with conventional IVF. ICSI may be appropriate in the following cases:

- Patients with very low sperm numbers (oligospermia)
- Patients with very low motility (asthenozoospermia)
- Patients with very high numbers of abnormal sperm (teratozoospermia)
- When the sperm have been taken directly from the epididymis (MESA) testicles (TESE) or PESA.
- When there is a high level of antibodies in the semen.

- When there has been previous failure to achieve fertilisation with conventional IVF, or when very few oocytes have fertilised following IVF.

The Canberra Fertility Centre does not wish for couples to undertake unnecessary treatment. Therefore ICSI will not be carried out unless one of the above criteria is met. Your specialist will advise you if ICSI is recommended for your cycle.

BENEFITS OF ICSI

ICSI is only suitable for attempting to achieve fertilisation where the sperm of the male partner are unable to achieve acceptable fertilisation rates using routine IVF. ICSI has been shown to achieve fertilisation rates of about 60% in the Centre where it was developed. ("Normal" sperm will fertilise about 70% of mature oocytes in normal IVF).

ICSI has resulted in pregnancy rates which are similar to IVF success rates at the Centre where it was developed. These rates depend to a large extent on:

- 1) The age of the woman.
- 2) The woman's infertility status and cause.
- 3) The number of embryos replaced.

At Canberra Fertility Centre, IVF success rates vary between 21% – 35%

DISADVANTAGES OF ICSI

While extensive trials have been completed and the embryologists are experienced, there may yet be unforeseen complications.

Not all oocytes collected may be of suitable quality or mature enough to undergo the injection procedure. If very few oocytes are collected, none may be suitable for ICSI. As ICSI is a very delicate procedure, some oocytes may be damaged, and therefore will not be available for transfer.

The National Perinatal Statistics Unit (NPSU) has advised that there does not appear to be any increased risk of abnormality than in the "normal" population.

ICSI AND GENETIC ABNORMALITIES (Y-chromosome defects)

Research has shown that there is an association between the defects on the Y chromosome, the chromosome that is responsible for "maleness" and male infertility or sub-fertility. Genes and groups of genes have been identified on the Y-chromosome that are involved in the production of sperm. If these genes are defective or parts of them are missing (deletions), sperm production will be reduced or non-existent. With the development of ICSI, we are now able to treat men with extremely low sperm counts. Using this technique, in conjunction with surgical methods of retrieving sperm directly from the testis, we are able to treat men who have only small areas of sperm production within the testis. It is therefore important that we understand the way in which genetic changes can affect male fertility. It is now possible to detect deletions in the Y-chromosome. While the Y-chromosome is essential for normal

male development and for fertility, it is unlikely that deletions on the Y-chromosome will have any other effect. Thus, a man who has a defect on the Y-chromosome which affects sperm production, may have male offspring who have the same defect and will also suffer from infertility or sub-fertility, but will otherwise be normal.

Currently, at the Canberra Fertility Centre, we do offer screening for Y-chromosome deletions to male partners of couples who are about to undergo ICSI for low sperm counts. Your Specialist Doctor will give you a referral for this test if deemed necessary. At present we do not know the frequency of these defects among ICSI patients but there is a considerable amount of research being done worldwide. It is important to understand that these genetic defects are only a concern for male offspring and, at worst these children will be expected to experience the same fertility problems as their fathers. However, we believe that it is important to make you aware if you have such a genetic defect so that you can take this into account when making decisions about your future treatment.

Patients who conceive following ICSI should carefully consider whether to have antenatal screening tests such as amniocentesis. Further advice will be given by your specialist gynaecologist. All children born from the ICSI technique may be required to be examined by a consultant paediatrician and a follow-up study of all children born may be undertaken. Patients receiving ICSI using surgically retrieved sperm for non obstructive azoospermia have a significantly increased risk of miscarriage. These miscarriages are the result of an increase in the level of the chromosomal disorder, mosaicism.

ICSI/IVF TREATMENT CYCLE

All women are treated as for all IVF treatments. Men will be required to provide a semen sample on the morning of the oocyte collection. However, if the sperm is to be collected surgically, this will have been performed earlier and frozen, or collected on the days prior to, or on the day, of oocyte collection.

The oocyte is examined to ensure it is suitable for ICSI, and a single sperm is injected into the oocyte. The oocytes are placed in culture and examined the following day to see whether they have fertilised normally. The balance of the procedure is similar to IVF.

Should you require any further information please make an appointment to see your gynaecologist or Dr Chris Copeland (Reproductive Biologist).

SURGICAL SPERM COLLECTION (SSC)

Until recently there was no treatment available in those cases where there was a complete absence of sperm in the ejaculate (azoospermia), and it has been estimated that about 10 – 15% of cases of male infertility are due to azoospermia. Azoospermia has many causes. Some of the causes are called “obstructive” meaning that there is a blockage in the sperm delivery system. Other causes are “non obstructive” meaning that there is an absence or a very marked reduction of sperm production in the testes.

There are three methods of surgically retrieving sperm from the testis. The method decided upon will depend whether obstructive or non-obstructive azoospermia has been diagnosed as well as other factors such as accessibility or scarring to the epididymis.

MICRO EPIDIDYMAL SPERM ASPIRATION (MESA)

MESA involves aspiration of the epididymis with a fine needle. It is a surgical procedure and is carried out under a general anesthetic. Sperm collected using this procedure are often of a poor quality but are usually suitable for cryostorage. One aspiration may provide enough sperm for several attempts at IVF using ICSI. MESA is most commonly associated with non-obstructive azoospermia and the procedure can be performed in advance of the IVF procedure.

TESTICULAR SPERM ASPIRATION (TESA)

TESA involves taking a small piece of tissue from the testis and isolating the sperm from the seminiferous tubule. The number of sperm isolated is often very small and as a general rule these sperm cannot be cryostored and the procedure is performed typically twenty four hours prior to the oocyte collection procedure. Originally TESA was only performed in cases of non obstructive azoospermia, however because the procedure can be performed under local anesthetic using a biopsy needle it has become the method of choice for all types of azoospermia in some clinics. However a surgical biopsy is less damaging to the testis than a needle biopsy, which is also very painful.

If your specialist has indicated the need for SSC please obtain the relevant information sheet from the Canberra Fertility Centre.

PERCUTANEOUS EPIDYDIMAL SPERM ASPIRATION (PESA)

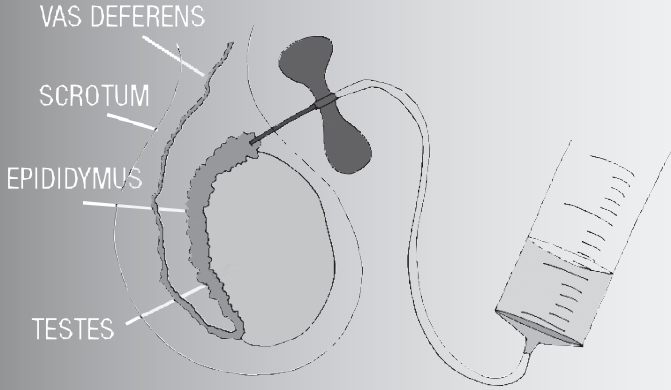
PESA is a simple technique to obtain sperm for Intra Cytoplasmic Sperm Injection (ICSI) in men who have an obstruction of the vas deferens, either due to vasectomy or other obstruction. To minimize scarring and damage, PESA usually is attempted on one side only. It is sometimes necessary to aspirate from both sides. Sufficient sperm for ICSI is obtained in 80% of attempts. In 10% of cases enough suitable sperm is found for cryopreservation.

The procedure is performed in the Canberra Fertility Centre rooms. After the procedure the man will be asked to wear a very tight pair of underpants to provide support to the scrotum. There is no other special preparation for the patient.

PESA is performed under local anaesthetic. This means that an anaesthetic is injected into the scrotum by the specialist to make the area numb. When this has been achieved the doctor will swab the scrotum with a warm antiseptic. The doctor will examine the testes to locate the vas deferens by gently feeling the scrotum. A small needle will be inserted into the vas deferens and the doctor will instruct the nurse assisting to draw back on the plunger in order to aspirate seminal fluid. When fluid is obtained it is passed to the andrologist to be examined for motile (moving) sperm. The procedure may need to be attempted again until motile sperm have been found.

The procedure is usually performed just prior to the woman's oocyte collection (on the same day). If no sperm is retrieved the oocyte collection may be cancelled.

PESA



ASSISTED HATCHING

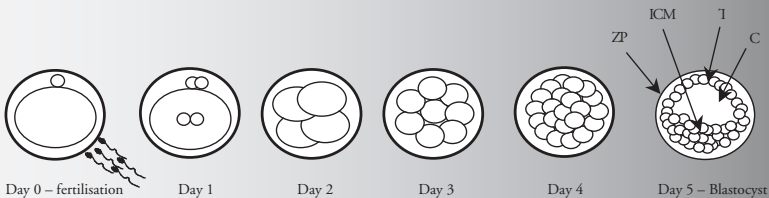
Assisted Hatching is a Laboratory procedure whereby the shell (zona pellucida) around the 2 or 3 day old embryo is mechanically weakened using a laser in a way which assists that embryo to “hatch” from the zona more easily, and to allow implantation into the lining of the uterus.

If your specialist has indicated the need for Assisted Hatching please obtain the relevant sheet from the Canberra Fertility Centre for more detailed information.

BLASTOCYST CULTURE

Extended culture or “Blastocyst Culture” (BC) is the culture of human embryos to Day 5 or Day 6 after fertilisation. Culture is carried out in specially formulated media that supports embryo growth to the blastocyst stage.

BLASTOCYST



WHAT IS A BLASTOCYST?

A blastocyst is a multi-celled embryo that has undergone many cell divisions to reach the stage where it has two different cell types and a central fluid-filled cavity. The surface cells, the trophoblast (T) will become the placenta, and the inner cells (ICM) will become the foetus itself. The fluid-filled space, the blastocoel (C), becomes the amniotic fluids. A human embryo will normally reach this stage about 5 days after fertilisation has occurred.

A healthy blastocyst should hatch from its outer shell, the zona pellucida (ZP) by the end of the 6th day. Within about 24 hours of hatching, it should begin to implant into the lining of the uterus).

However, BC is a new technology and has some unresolved issues. In the opinion of some scientists, insufficient testing has been carried out to determine possible long term effects.

The following issues remain unresolved:

- Freezing and thawing of excess blastocyst stage embryos has a slightly lower outcome, as embryos may not survive the process.
- There is an increased incidence of monozygotic (identical) twins. Risks to babies and mothers are increased in multiple pregnancies. Most twins born as a result of IVF are dizygotic (non-identical) twins who develop when more than one embryo is transferred. Following IVF, and according to some studies particularly with BC, there is also a small increased risk of single embryos dividing into two individuals to produce monozygotic (identical) twins. Identical twins have a higher risk of abnormalities and clinical problems than non-identical twins. To avoid multiple pregnancy, some couples will be encouraged to have single embryos transfer.
- Some research suggests that there are more male babies born after BC but this is still unconfirmed.
- Early research suggests that keeping embryos in culture for longer might cause non-inheritable changes to gene expression but this is only very early and much more work needs to be done in this area to determine if it is a real risk.

It is also important to note that 10–15% of patients will not have an embryo transfer as none of their embryos will progress to blastocyst stage. The most likely reason is chromosomal abnormalities in the embryos in question and this is more likely to occur in women over the age of 37. Transfer of embryos that have arrested development has a very poor pregnancy outcome. Research has shown that when there are fewer than four 8-cell embryos on day 3, there is no advantage gained by extending culture to the blastocyst stage. In this case, a day 3 embryo transfer will be recommended.

BC offers no advantage for patients who produce low numbers of embryos and those who have no 8-cell embryos on day 3 of culture.

Current research suggests that BC is beneficial for specific patient groups, in light of this information we generally recommend that day 2/3 embryos are transferred. Individual assessment will be carried out to determine whether BC may be warranted in any particular case.

RISKS, SIDE EFFECTS AND OTHER CONSEQUENCES ASSOCIATED WITH ART

ART involves some risks, potential side effects and other consequences. The first IVF success, Louise Brown, was born in 1980 so it will be quite a while before results of any long-term studies of risks and side effects are available. Detailed below are current known or potential risks. The specific possible risks and side effects of A.R.T include, but may not be limited to, the following:

SURGERY

Oocyte (egg) collection is performed using either laparoscopy or transvaginal ultrasound. The following complications of surgery have been described:

- 1) **Bleeding:** from the ovary or from adjacent pelvic structures. Bleeding usually settles by itself but, very rarely, the "bleeding point" must be tied off, which requires additional surgery.
- 2) **Pelvic Infection:** There is a small risk of pelvic infection after the oocyte recovery.
- 3) **Anaesthesia:** Risks include allergic rashes, temporary paralysis, vomiting and even, in more extreme cases, death. With young, fit, healthy women these risks are lower than for general surgery patients. Laparoscopy requires deeper anaesthesia than for a transvaginal aspiration, which may be carried out under sedation with local anaesthesia.
- 4) **Laparoscopy**
 - a) "Superficial" haemorrhage. Some bruising around the puncture marks or abdominal wall is common.
 - b) "Accidental" bowel injury. This can occur especially in patients who have had previous surgery (and this applies to many requiring ART) who may have bowel adhesions. This increases the risk of injury to the bowel. Any injury must be repaired immediately to avoid peritonitis (infection of the abdomen). A large percentage (45%) of bowel injuries are said to go unnoticed at the time and present within 24 hours.
 - c) *Retained "gas":* The carbon dioxide gas which is placed into the abdomen during laparoscopy may not all be expelled at the end of the operation; this is more usual in patients with adhesions. This may provide some discomfort under the ribs or in the shoulder. It does not usually last longer than twenty-four hours.
 - d) *Major injury to blood vessel.* This requires repair by open surgery. There is a risk of death from severe complications.
- 5) **Transvaginal Ultrasound Aspiration**

Unrecognised bleeding. Symptoms should be noted within six hours and this is the basis of our requirement that nursing observation/patient self monitoring be carried out for this period of time.

MEDICATIONS

Significant side effects from the medication are fairly uncommon, however the following have been reported in the medical literature, and patients need to be aware of them.

Synarel/Lucrin

Synarel and Lucrin are synthetic drugs which are variants of a naturally occurring brain chemical. The reported side effects include:

- Headaches
- Local irritation inside the nose (Synarel) or injection site (Lucrin)
- Occasional hot flushes, breast tenderness and vaginal dryness.
- Muscle weakness, pains and double vision have been rarely reported.

Follicle Stimulating Hormone (FSH) (either Gonal-F or Puregon)

This is a purely synthetic hormone that stimulates the ovaries.

The reported side effects include:

- Headaches, tiredness and lethargy
- Irritability and tearfulness
- Breast tenderness
- Nausea
- Enlarged tender ovaries
- Excessive clear vaginal secretions
- Abdominal distension and discomfort
- Fluid retention
- OHSS (see following)

Ovidrel/Pregnyl (HCG)

Pregnyl is a sterile hormone that is prepared from the urine of pregnant women (Ovidrel is a purely, synthetic hormone). It is given 36–38 hours before IVF oocyte retrieval and is used to mature the follicles and to trigger ovulation. It is sometimes prescribed in lower doses after oocyte collection/ovulation. HCG may also be prescribed for tracking/OI/AIH/AID patients to induce ovulation. The reported side effects include:

- Breast enlargement
- Ovarian tenderness
- Abdominal distension

- Nausea, constipation
- Pain at the injection site
- OHSS (see below)

CLOMID / SEROPHENE (CLOMIPHENE CITRATE) (NOW NOT COMMONLY USED FOR IVF)

Clomid/Serophene is taken in tablet form and is used in the first few days of the cycle to induce follicular development. The reported side effects include:

- Nausea
- Hot flushes
- Headaches, depression
- Visual blurring
- Abdominal distension
- Hair loss
- Weight gain

OVARIAN HYPERSTIMULATION SYNDROME (OHSS)

In approximately 3% of women undergoing IVF there is an over response to ovarian stimulation, ie too many follicles develop so that the ovaries become very enlarged. If this is suspected prior to oocyte collection, the patient may be "coasted" (which means treatment stopped or reduced to allow the hormones to settle down) or the treatment cycle may be cancelled and the ovaries allowed to return to normal size. Future treatment will require modification. Occasionally, we may proceed with oocyte collection but not proceed to embryo transfer. Should this occur, any healthy embryos can be frozen and replaced later during a natural, unstimulated cycle, and this is much safer. If the syndrome does occur, it usually becomes evident 2–8 days after oocyte retrieval subsiding 2–3 weeks later if pregnancy does not occur.

However up to 50% of cases are associated with pregnancy in which case the symptoms may be more prolonged and severe. The symptoms are:

- Severe nausea and vomiting
- Increased abdominal distension
- Diarrhoea
- Shortness of breath
- Increased thirst
- Decreasing urinary output

Mild OHSS, by far the most common form, is usually adequately treated by rest, fluids (2–3 litres per day) and mild pain relief.

Moderate to severe OHSS (approx 1.5% of patients) requires hospitalisation with intravenous fluids, occasionally paracentesis (draining of abdominal fluid) and close monitoring of blood coagulation and biochemistry. In over 220,000 treatment cycles in Australia, there have been no recorded fatalities but the process can be life threatening and there have been cases of significant blood clotting problems and circulation failure.

BLOOD SAMPLING

The taking of blood samples may cause discomfort and/or development of a bruise at the needle puncture site. Please eat a good breakfast with fluids before your blood test. If the weather is cold, please ensure you are adequately attired and warm.

MISCARRIAGE

Light bleeding (or spotting) occurs in up to 55% of ART pregnancies and should not cause undue concern unless associated with increasing abdominal pain. An ultrasound is organised approximately 3–4 weeks after the positive pregnancy test to check the pregnancy. Occasionally pain will necessitate an earlier ultrasound scan. Miscarriages can still occur in up to 25% of all pregnancies. A very early miscarriage will not necessarily require curettage (D & C). Should a curettage be required, tissue analysis may occasionally give us an indication as to why the miscarriage occurred. However in most cases we cannot give a reason. Miscarriage can be emotionally devastating – counselling may be helpful at this time.

ECTOPIC PREGNANCY

An ectopic pregnancy is one that implants outside the uterus, usually in the Fallopian tube. It occurs in approximately 3% of ART pregnancies, often when there is pre-existing fallopian damage. It is disappointing to note that ectopic pregnancies can occur even when embryos have been placed in the uterus (the embryos “float” around for a few days before implanting and sometimes float into damaged tubes and get stuck there). The signs that might indicate the possibility of an ectopic pregnancy are abnormal hormone levels, brown vaginal bleeding and abdominal pain. Such a pregnancy is often diagnosable by ultrasound and cannot continue, and therefore surgical intervention is required. Early diagnosis not only minimises tubal damage but also means the ectopic can be removed by laparoscopy rather than an ‘open’ operation.

MULTIPLE PREGNANCY

Twins occur in up to 20% and triplets in less than 1% of ‘successful’ ART cycles. This will be influenced by a number of factors (especially age) but is a result of transferring more than one embryo. We appreciate this creates a dilemma. We must however consider the implications of multiple pregnancy. Particularly of concern is the increased risk of cerebral palsy in twins and triplets.

Although a higher pregnancy rate is achievable by transferring more embryos it was the recommendation of the Reproductive Technology Accreditation Committee that a maximum of two (2) be transferred. The Canberra Fertility Centre recommends the transfer of one (1) embryo if you are <35 years of age and in your first cycle of treatment. See the separate handout entitled "How Many Embryos Should I Have Transferred?" for greater detail of this recommendation.

For patients using FSH during an ovulation induction cycle, there is a chance of multiple pregnancy to occur. If the ovary produces more than one follicle (which may have an oocyte inside) in a cycle, it is possible that each oocyte may fertilise and become an implanted embryo, and therefore a multiple pregnancy.

There are several disadvantages in multiple pregnancies:

- Increased risk of miscarriage
- Obstetric complications, such as high blood pressure, requiring antenatal hospitalisation
- Premature deliveries (which may require neonatal intensive care)
- Birth complications including cerebral palsy
- Long term defects in the children
- Economic costs involved in caring for twins.
- Potentially psychological problems in the twins themselves.

CONGENITAL ABNORMALITIES (BIRTH DEFECTS)

Some recent publications have indicated there is an increased risk of abnormalities in children conceived using ART, others have not been able to confirm these increases. It would appear that the technique such as IVF is not responsible, and the increased risk, if it exists, lies with the causes of infertility.

LABORATORY MATERIALS (CULTURE MEDIUM)

There may be some risks associated with the culturing of embryos. These risks are associated with several products that are used in the IVF laboratory that are derived from human or animal origin, which has the potential to transmit diseases to patients undergoing ART.

Human Serum Albumin (HSA) is a source of proteins and amino acids for the embryos while they are in culture. The HSA is derived from pooled serum from blood donors who have been extensively screened, so the risk of contracting Hepatitis B, C or HIV is extremely low. In spite of stringent purification and sterilisation measures, one cannot eradicate with absolute certainty the possibility of transmission of known or unknown pathogens bound to serum proteins. For example, HSA used in our culture media may be contaminated with albumin donated by a person who later died of the rare disease of Creutzfeldt-Jakob Disease (CJD). However, this risk is seen as minute.

Hyaluronidase is derived from the ovine species (sheep). This is an enzyme used to strip the cumulus cells that surround the oocytes prior to ICSI. The oocytes are in contact with this enzyme for a very short period of time

(usually about 30 seconds), so the risks associated with this product are thought to be very small. The risk of using this product is related to the potential presence of prions, which are the infectious agents of Bovine Spongiform Encephalopathy. Again this risk is minute.

Glycerol is used as a cryoprotectant when freezing blastocysts. Glycerol is derived from the ovine species and carries the same risk, which is seen as being very small.

DISAPPOINTMENT

Infertility itself creates a feeling of intense hurt and disappointment. The opportunity of an ART treatment and thus the possibility of a pregnancy offers hope. However, the intensity of effort put into undergoing ART procedures is likely to be unrewarded in any one cycle.

It is also possible that your parents, relations or friends will not appreciate what you have been through. They cannot really know. You may feel lonely yet become irritated by sympathy. Feelings of anger and guilt are also common. Do not be afraid or ashamed to ask for help. The Canberra Fertility Centre Counsellor is available for private consultations.

DISCLOSURE TO CHILDREN ABOUT THEIR METHOD OF CONCEPTION

Most parents/potential parents of a child conceived by IVF or Donor Insemination have, at some stage, wondered whether or not to tell their child of his or her means of conception.

It is a complex and sensitive issue and touches on feelings about infertility and the emotional pain associated with it. It is also connected to whether or not you have told others about how your child was/may be conceived. These issues will be discussed at the interview with the counsellor prior to treatment. Any child born after a battle with infertility is so precious that parents obviously want to do their best for him or her. This is a very reasonable and understandable concern for any parent in this situation. Please feel free to discuss these issues with our clinic Counsellor.

OTHER SERVICES PROVIDED BY THE CANBERRA FERTILITY CENTRE

OOCYTE DONATION

Some women of reproductive age are unable to produce or use their own oocytes. This may be due to the woman having no ovaries, entering menopause prematurely, having hereditary disorders, or having inaccessible ovaries (unable to collect her oocytes). In consultation with their Doctor they may choose the option of using donated oocytes.

Please contact the Nurse Coordinator for further information. See page 16 for greater detail.

EMBRYO DONATION

Your specialist doctor may have suggested the use of donated embryos. Please contact the Canberra Fertility Centre Nurse Coordinator about the availability of donated embryos. There is a waiting list that operates and a counselling session and report is required. All costs incurred by the embryo donors need to be met by the recipients.

SURROGACY

Please contact the Canberra Fertility Centre if you are considering Surrogacy. The Nurse Coordinator can forward to you an information pack on Surrogacy/Applying for Surrogacy that covers the requirements for surrogacy and relevant costs involved.

GLOSSARY

Amniocentesis: Insertion of a needle into the uterus through the abdominal wall to withdraw amniotic fluid for assessment of fetal health and maturity.

Andrology: Study of male sex hormones/sperm testing.

ART (Assisted Reproductive Technology): Several procedures employed to bring about conception without sexual intercourse, including AIH, AID, IVF, and GIFT.

Artificial Insemination (AIH/AID): Placing sperm into the cervix/uterus through artificial means instead of by coitus – usually injected through a catheter or cannula after being washed. This procedure is used for both donor (AID) and husband's (AIH) sperm. This technique is used to overcome sexual performance problems, to circumvent sperm-mucus interaction problems, to maximize the potential for poor semen, and for using donor sperm.

Assisted Hatching: Thinning of the zona pellucida prior to transferring the embryo into the uterus.

Asthenozoospermia: Low sperm motility.

Azoospermia: Absence of sperm in ejaculate.

Basal Body temperature charting: Monitoring of body temperature each morning to help confirm ovulation response.

Biochemical Pregnancy: Transient rise in hCG pregnancy hormone.

Biochemistry: Department of the Canberra Fertility Centre laboratory that analyses and reports on hormone blood testing.

Blastocoel cavity: Fluid filled cavity of a blastocyst.

Blastocyst Culture: Extended culture of embryos in the laboratory to Day 5 or 6 when they have two different cell types and are called blastocysts.

Cannula: A hollow tube used for insemination, GIFT and embryo transfer, and often with an inner catheter.

Catheter: A hollow flexible tube used to aspirate or inject fluids.

Cetrotide: GnRH antagonist marketed by Serono.

Cervical pH: Acidity of the cervical mucus.

Cervical Swab: Test of cervix environment for evidence of bacterial infection (and/or viral infection). Sent to pathology for analysis.

Cervix: Opening between the vagina and the uterus.

Chromosomal Abnormalities: A fault in the genetics of the sperm/oocytes/embryo. These may result in disruption of the maturation, fertilization, implantation and fetal processes, and may result in miscarriage or birth defects.

Chromosome Analysis: Testing of a blood/tissue sample for the pattern of genes/ chromosomes.

Clomid (Clomiphene Citrate): A fertility drug that stimulates ovulation through the release of gonadotropins from the pituitary gland.

Congenital: Present at birth.

Congenital Absence of the Vas Deferens (CAV): absence at birth of conducting pathway from testes for sperm to be ejaculated. Often caused by Cystic Fibrosis gene so screening should be performed for this gene and potential risk for offspring should be discussed.

Corpus Luteum: The yellow-pigmented glandular structure that forms from the ovarian follicle following ovulation. The gland produces progesterone, which is responsible for preparing and supporting the uterine lining for implantation.

Crinone Gel: Progesterone gel medication marketed by Serono.

Cryopreservation: Freezing and storing of sperm/embryos in sub-zero liquid nitrogen tanks.

Cryoprotectant: Used to limit damage during cryopreservation.

Cystic Fibrosis: Generalised hereditary disorder associated with the accumulation of excessively thick mucus and abnormal secretion of sweat and saliva.

Dilation and Curettage (D&C): A procedure used to dilate (expand) the cervical canal and scrape out the lining and contents of the uterus. The procedure can be used to diagnose or treat the cause of abnormal bleeding and to resolve a non progressive pregnancy.

Down Regulation Protocol: Most common protocol used for controlled ovarian hyperstimulation in IVF/GIFT cycles.

Ectopic Pregnancy: A pregnancy located outside of the uterus, usually in a fallopian tube.

Egg Pick Up: Surgical procedure to retrieve eggs (oocytes) during IVF/GIFT using transvaginal ultrasound or laparoscopy.

Embryo Transfer (ET): Placing an oocyte fertilised outside the womb into a woman's uterus or fallopian tube.

Embryology: Department of the Canberra Fertility Centre laboratory dealing with oocyte collection, fertilisation, embryo transfer and cryopreservation procedures.

Endometriosis: Growth of endometrial tissue outside the uterus.

Endometrium: The inner lining of the uterus which grows and sheds in response to oestrogen and progesterone stimulation; the bed of tissue designed to nourish the implanted embryo.

Endometrial Biopsy: Sampling of the endometrium and analysis for hormonal effects.

Epididymis: A coiled tubular organ attached to and lying on the testicle that provides for the transport, storage and maturation of sperm.

Oestrogen: see Oestrogen.

Estradiol: see Oestradiol.

Fallopian Tube: Ducts through which oocytes travel to the uterus once released from the ovarian follicle. Sperm normally meet the oocyte in the fallopian tube, the site at which fertilisation usually occurs.

Fertilisation: The combining of the genetic material carried by sperm and oocyte to create an embryo. Normally occurs inside the fallopian tube (in vivo) but may also occur in a petri dish (in vitro). See also In Vitro Fertilisation.

Frozen Embryo Transfer (FET): A procedure where frozen (cryopreserved) embryos are thawed and then placed into the uterus.

Flare Protocol: Protocol used for some IVF/GIFT procedures where a "flare-up" of hormones occurs when the medications commence. More commonly the down regulation protocol is used that avoids the effect of this hormone "flare-up".

Follicle: A fluid-filled sac in the ovary that contains an oocyte that is released at ovulation. This follicle grows to about one inch in size when it is ready to ovulate.

Follicle Stimulating Hormone (FSH): A pituitary hormone that stimulates spermatogenesis and follicular development. In the man, FSH stimulates the Sertoli cells in the testicles and supports sperm production. In the woman, FSH stimulates the growth of the ovarian follicle. Elevated FSH levels are indicative of gonadal failure in both men and woman.

Folic Acid: one of the B complex vitamins, folic acid is involved in the synthesis of amino acids and DNA. Deficiency causes megaloblastic anaemia. Requirements for folic acid are increased in early pregnancy, and supplements are advised for those planning pregnancy and during the first trimester of pregnancy.

Gamete Intrafallopian Transfer (GIFT): A technique that may be used in lieu of in vitro fertilisation for women with patent (clear and open) tubes. After oocyte collection the oocytes are mixed with sperm and then immediately injected through the embryo into the woman's fallopian tubes for in vivo (within the body) fertilisation. The GIFT procedure is done through laparoscopy.

Glycerol: A sugar alcohol – the building block of fats.

Gonads: The glands that make reproductive cells and “sex” hormones: the testicles, which make sperm and testosterone, and the ovaries, which make oocytes (ova) and oestrogen.

Gonadotropins – Hormones that control reproductive function: Follicle Stimulating Hormone (FSH) and Lutenising Hormone (LH).

Gonadotropin Releasing Hormone (GnRH) – The hormone which controls the production and release of gonadotropins. Secreted by the hypothalamus every ninety minutes or so, this hormone enables the pituitary to secrete LH and FSH, which stimulate the gonads.

GnRH Agonist: Medication that depletes stores of GnRH. Used to prevent premature ovulation during IVF/GIFT procedures.

GnRH Antagonist: Medication that blocks the release of GnRH. Used to prevent premature ovulation during IVF/GIFT procedures.

Gonal F: FSH injection marketed by Serono.

Human Chorionic Gonadotropin (hCG/HCG): The hormone produced in early pregnancy which keeps the corpus luteum producing progesterone. Also used via injection (Profasi/Pregnyl) to trigger ovulation after some fertility treatments.

Hormone: A substance produced by an endocrine gland that travels through the bloodstream to a specific organ.

Hyperstimulate: Promote over-response.

Hysterosalpingogram: X-Ray using dye injected through the cervix to examine the endometrial cavity and fallopian tubes.

Hysteroscopy: Uterus endometrial cavity examination using a fibre-optic camera.

Implantation (Embryo): The embedding of the embryo into tissue. Implantation usually occurs in the lining of the uterus 5–10 days after ovulation; however, in an ectopic pregnancy it may occur elsewhere in the body.

Intracytoplasmic Sperm Injection (ICSI): A procedure in which a single sperm is injected into the oocyte to enhance fertilisation with very low sperm counts or with non-motile sperm.

Interuterine sperm insemination: see Artificial Insemination.

In Vitro maturation: Growth of an embryo that occurs outside the body.

In Vitro Fertilisation (IVF): Fertilisation of sperm and oocyte to form an embryo takes place outside the body in a small glass dish.

Laparoscopy: Examination of the pelvic region by using a small telescope that can be inserted into a hole in the abdominal wall for viewing the internal organs. Used to access the fallopian tubes in GIFT and sometimes for oocyte retrieval from the ovaries in IVF.

Luteal Phase: Post-ovulatory phase of a woman's cycle. The corpus luteum produces progesterone, which cause the uterine lining to thicken to support the implantation and growth of the embryo.

Luteinising Hormone (LH): A pituitary hormone that stimulates the gonads. An LH surge is the spiking release of LH that causes the release of a mature oocyte from the follicle.

Lucrin: GnRH Agonist injection medication.

Menopause: span of time when ovaries stop functioning and therefore menstruation and childbearing ceases.

Microsurgical Epididymal Sperm Aspiration (MESA): Using microsurgery to remove sperm from the epididymis for use in IVF usually with ICSI.

Miscarriage: Spontaneous loss of an embryo or fetus from the womb.

Monozygotic twins: identical twins forming from a single embryo dividing in two.

Morphology: The shape of sperm as studied in a semen analysis.

Motility: The measurement of motion and forward progression of sperm in a semen analysis.

Oestradiol: the principal Oestrogen produced by the ovaries.

Oestrogen: The female sex hormone.

OHSS: see Ovarian Hyperstimulation Syndrome.

Oligospermia: A low number of sperm in the semen.

Oocyte (Egg): The female reproductive cell.

Orgalutran: The GnRH antagonist marketed by Organon.

Ovarian Cyst: A fluid-filled sac inside the ovary. May be found in conjunction with ovulation disorders, endometriosis (chocolate cyst), and tumors of the ovary.

Ovarian Hyperstimulation (Controlled): Using medications to stimulate the ovaries to produce more oocytes as in IVF treatments and ovulation induction.

Ovarian Hyperstimulation Syndrome OHSS: A potentially life-threatening side effect of ovulation induction with injectable fertility medications. A woman's ovaries become enlarged and produce an overabundance of oocytes. Blood hormone levels rise, fluid may collect in the lungs or abdominal cavity, and ovarian cysts may rupture, causing internal bleeding. Blood clots sometimes develop. Symptoms include nausea, vomiting, diarrhoea, bloating, sudden weight gain and abdominal pain. Cycles stimulated with these drugs must be carefully monitored with ultrasound scans. OHSS may be prevented by withholding the hCG injection when ultrasound monitoring indicates that too many follicles have matured.

Ovary: The female gonad; produces oocytes and female hormones.

Ovidrel: HCG injection marketed by Serono.

Ovulation: The release of the egg (ovum/oocyte) from the ovarian follicle.

Ovulation Induction: Medical treatment used to enhance and initiate ovulation. Eg: Use of the medications Clomid, Serophene, Gonal F, and Pregon.

Ovum: The egg; the reproductive cell from the ovary; the female sex cell or oocyte.

Polar Body: The discarded genetic material resulting from female germ cell division. The presence of a polar body indicates maturity of an oocyte collected during IVF/ICSI.

Polycystic Ovarian Syndrome (PCOS): A condition found in women who don't ovulate/ ovulate infrequently, characterized by excessive production of androgens (male sex hormones) and the presence of cysts in the ovaries. Though PCOS can be without symptoms, some include excessive weight gain, acne and excessive hair growth.

Post Coital Test (PCT): A microscopic examination of the cervical mucus performed several hours after intercourse to determine compatibility between the woman's mucus and the man's semen.

Progesterone: The hormone produced by the corpus luteum during the second half of a woman's cycle. It thickens the lining of the uterus to prepare it to accept implantation of a fertilised oocyte. It is released in pulses, so the amount in the bloodstream is not constant.

Pituitary: An endocrine gland that secretes a number of hormones including gonadotropins (FSH and LH), thyroid stimulating hormone and prolactin.

Pre-Implantation Diagnosis: sampling of cells from an embryo for chromosomal analysis prior to embryo transfer.

Pregnyl: HCG injections marketed by Organon.

Progynova: Oestrogen support medication often used in FET cycles when a woman is anovulatory.

Prolactin: Hormone released by the anterior pituitary that stimulates the mammary gland and can impact on the function of the corpus luteum.

Puregon: FSH injection marketed by Organon.

Rubella: German measles.

Semen Analysis: A laboratory test used to assess semen quality: sperm quantity, concentration, morphology (form), and motility. In addition, it measures semen (uid).

Semen Culture: A laboratory test used to analyse the bacterial levels of a semen sample.

Serophene (Clomiphene Citrate): A fertility drug that stimulates ovulation through the release of gonadotropins from the pituitary gland. Marketed by Serono.

Sperm Antibodies: Antibodies are produced by the immune system to ght o foreign substances, like bacteria. Antisperm antibodies attach themselves to sperm and inhibit movement and their ability to fertilise. Either the man or the woman may produce sperm antibodies.

Sperm Banking: Cryopreservation of semen samples for future use.

Synarel: GnRH agonist Nasal spray medication.

Testes: The two male sexual glands contained in the scrotum. They produce the male hormone testosterone and the male reproductive cells (sperm). Singular is testicle.

Testicular Sperm Aspiration (TESA)/Testicular Biopsy/Testicular Sperm Extraction (TESE): A surgical procedure used to take a small sample of testicular tissue for microscopic examination. May be used in an attempt to obtain sperm for IVF using ICSI.

Transvaginal: Through the vagina or across its wall as in a surgical procedure

Transvaginal Ultrasound: An ultrasound examination performed by means of inserting a probe into the vagina.

Teratozoospermia: high numbers of abnormal sperm on analysis.

Testosterone: The male hormone responsible for the formation of secondary sex characteristics and for supporting the sex drive.

Thyroid: gland with two lobes either side of the trachea (Adams Apple) that secretes hormones that are concerned in regulating metabolism.

Tubal patency: clear and well functioning fallopian tubes.

Ultrasound: technique used to evaluate internal organs using sound waves reflected from the tissues.

Ultrasound follicle tracking: Monitoring of ovarian follicles using ultrasound technique.

Ultrasound guided pick-up: Transvaginal ultrasound visualisation of the ovaries enabling access the ovarian follicles and oocyte collection using a transvaginal probe attachment for IVF.

Urologist: Specialist surgeon often consulted for Male Infertility issues.

Uterine Cavity Measurement: Length of uterine cavity from fundus to cervix measured using a sterile guide or estimated via ultrasound.

Uterus: The muscular female reproductive organ that houses and nourishes the fetus during pregnancy. Internal lining known as the endometrium. The womb.

Vaginal pessary: Medication designed to be absorbed through the vaginal wall.

Vas Deferens: a pair of excretory ducts that convey semen from the epididymis to the urethra.

Vasectomy: The surgical separation of both vas deferens. A procedure used for birth control/sterilization.

X-Chromosome: The genetic information in a cell that transmits the information necessary to make a female. All oocytes contain one X-chromosome, and half of all sperm carry an X-chromosome. When two X-chromosomes combine, the baby will be a girl.

Y-Chromosome: The genetic material that transmits the information necessary to make a male. The Y chromosome can be found in one-half of the man's sperm cells. When an X- and a Y-chromosome combine, the baby will be a boy.

Zona Pellucida: The protective outer membrane surrounding the oocyte.

RESOURCES

CANBERRA FERTILITY CENTRE

List of information brochures

WHAT IS ACCESS?
 ASSISTED HATCHING
 BABIES VS CAREER
 CETROTIDE and ORGALUTRAN
 COUNSELLING SERVICES
 ECTOPIC PREGNANCY
 EMOTIONAL RESPONSES TO INFERTILITY
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 FACT SHEETS FOR RELATIVES AND FRIENDS
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 HOW MANY EMBRYOS SHOULD I HAVE TRANSFERRED?
 LIFESTYLE FACTORS & INFERTILITY
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 OESTRADIOL IN OOCYTE
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 SEMEN COLLECTION FOR ANALYSIS, ARTIFICIAL
 INSEMINATION (AI) AND IVF
 SMOKING AND CONCEPTION
 SURGICAL SPERM COLLECTION (SSC)
 SURROGACY INFORMATION

TUBAL DISEASE AND MICROSURGERY
 ULTRASOUND
 UNEXPLAINED INFERTILITY

List of fee booklets

CANBERRA FERTILITY CENTRE EXPLANATION OF FEES
 EXPLANATION OF FEES IVF AND FET FOR SURROGACY
 PROCEDURES
 EXPLANATION OF FEES RECIPIENT OF DONOR EMBRYOS
 EXPLANATION OF FEES (DONOR OOCYTE PROCEDURES)
 RECIPIENT OF DONOR OOCYTES
 EXPLANATION OF FEES RECIPIENTS OF DONOR SPERM
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List of information booklets

CANBERRA FERTILITY CENTRE INFORMATION BOOKLET
 CLINIC PROCEDURES BOOKLET
 SEMEN DONOR INFORMATION BOOKLET
 SURROGACY INFORMATION BOOKLET

Websites

The following websites contain helpful information:

www.nhmrc.gov.au – Ethical Guidelines

Parentage Act 2004 – Legal Issues

www.dcsq.org.au

www.xyandme.com

www.dcnetwork.org

These three have DVDs and books for adults and children.

DVDs and videos

Canberra Fertility Centre also has a video library which as a patient, you are welcome to use and borrow any item for a short period of time. Currently there is no charge for this service. The library forms a valuable source of reference information for couples who are interested in learning more about the procedures they are about to embark upon.

For further details, please ask the Coordinating nurse for the list of books and tapes available.





