Assisted reproductive technology – IVF and ICSI
IVF (in-vitro-fertilization) and ICSI (intracytoplasmic sperm injection) are assisted reproductive treatment (ART) procedures in which fertilisation of an egg occurs outside the body. IVF and ICSI involve a series of steps taken over several weeks. Your own personal circumstances and medical history must be taken into account when you estimate your chance of having a baby with IVF or ICSI. In the hands of experts, IVF and ICSI are safe, and medical complications are rare. In Australia, Medicare covers some of the costs associated with IVF and ICSI (as does private health insurance) but there are also substantial out-of-pocket costs.

This page provides a general overview of two types of assisted reproductive treatment (ART) – in-vitro fertilisation (IVF) and intracytoplasmic sperm injection (ICSI). For more information about IVF and ICSI and other assisted reproductive technologies, visit the Victorian Assisted Reproductive Treatment Authority (VARTA) website.

What IVF and ICSI involve

IVF and ICSI are forms of assisted reproductive treatment (ART) in which eggs are fertilised with sperm, outside the body. IVF is used for female infertility and unexplained infertility, and ICSI is used when there is a male cause of infertility.

The procedure for these two treatments is as follows, and is summarised in the diagram below.

The woman’s ovaries are stimulated with a course of injectable fertility drugs. When the eggs are mature they are collected while the woman is under light anaesthetic.

- In IVF, sperm from the male partner or a donor are added to the eggs to allow them to be fertilised.
- In ICSI, the scientist picks up a single sperm and injects it into each egg using a microscopic needle.

The eggs and sperm are then kept in the laboratory for two to five days (depending on clinic practice) for embryos to develop.

If the eggs fertilise and embryos develop, one embryo (sometimes two) is placed into the woman's uterus in a procedure called embryo transfer. Sometimes several embryos develop, and they can be frozen for use in later embryo transfer procedures.

Two weeks after the embryo transfer the woman has a blood test to see if the treatment has been successful. If the test is positive, an ultrasound examination is scheduled two weeks later to check that the pregnancy is developing normally.

If the test is negative the woman will have a period and will then need to decide whether to try again. If she has frozen embryos these can be replaced one by one without the need to stimulate the ovaries.

Understanding IVF and ICSI success rates

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Clinics report success rates in different ways. When comparing clinics’ success rates for IVF and ICSI you need to make sure you compare like with like, or ‘apples with apples’. And, most importantly, your own personal circumstances and medical history must be taken into account when you estimate your chance of having a baby with IVF or ICSI.

Find out more about understanding IVF success rates.

Possible health effects of IVF and ICSI

In the hands of experts, IVF and ICSI are safe procedures and medical complications are rare. However, as with all medical procedures, there are some possible health effects to consider for women and men undergoing treatment and for children born as a result of treatment. Risks associated with IVF and ICSI include:

- an excessive response to fertility drugs (ovarian hyperstimulation syndrome, OHSS)
- multiple birth (twins and triplets)
- premature labour and low birth weight
- a small increased risk of birth defects compared with spontaneously-conceived babies
- caesarean delivery.

IVF and ICSI are also psychologically demanding and emotional health effects are common. In Australia, counselling services are available in all fertility clinics. Women who have IVF treatment, and their partners, are encouraged to use these if they experience emotional difficulties.

Read more on possible health effects of IVF.

Cost of IVF and ICSI

In Australia, Medicare (and private health insurance) covers some of the costs associated with IVF and ICSI but there are also substantial out-of-pocket costs.

The difference between the Medicare benefit and the amount charged by the clinic is the ‘out-of-pocket cost’. These costs vary, depending on the treatment, the clinic and whether a patient has reached the Medicare Safety Net threshold.

Read more on the cost of IVF.

Deciding what to do with unused embryos

Sometimes people have embryos in storage that they don’t intend to use. Most commonly this is because they have completed their family but for some people, health reasons prevent them from using their stored embryos. At the end of the storage time limit, which in Victoria is five years, people have to decide what to do with unused embryos. There are four options available:

1. applying for an extension of storage time
2. disposing of the embryos
3. allowing the embryos to be used for research
4. donating the embryos to another infertile person or couple.

Couples who have frozen embryos that they are not intending to use often find it difficult to decide what to do with them. Victorian Assisted Reproductive Treatment Authority (VARTA) has an interactive decision-making tool designed to help people who are find it hard to decide what to do with their unused embryos.

Where to get help

- Your local doctor
- Obstetrician or gynaecologist
- Your local community health centre
- Family planning clinic
- IVF clinic

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More information

Reproductive system - female

The following content is displayed as Tabs. Once you have activated a link navigate to the end of the list to view its associated content. The activated link is defined as Active Tab

- Female reproductive system explained
- Menstruation and ovulation
- Menopause
- Fertility, pregnancy and childbirth
- Breast
- Fallopian tubes and ovaries
- Uterus and cervix
- Pelvis, vagina and vulva
- Reproductive and contraception

Female reproductive system explained

- Androgen deficiency in women
Androgen deficiency in women and its treatment is controversial, and more research is needed.

- DES daughters
  If your mother took DES while she was pregnant with you, then you are a DES daughter or DES son.

- Health checks for women
  A woman at high risk of a particular disease should be checked more frequently and/or at an earlier age.

- Pelvic floor
  Pelvic floor exercises are designed to improve muscle tone and prevent the need for corrective surgery.

- Pregnancy stages and changes
  It’s helpful to have an idea of how your body may react to the different stages of pregnancy. It also helps to know how pregnancy may affect your emotions and feelings.

- Puberty
  Adjusting to the many changes that happen around puberty can be difficult for both parents and young people.

- Reproductive system
  New life begins when a male sex cell (sperm) fertilises a female egg (ovum) within the female reproductive system.

- Sexually transmitted infections (STIs)
  It is not difficult to avoid catching sexually transmitted infections (STIs).

- Transvaginal mesh
  Transvaginal mesh has been used for more than 20 years to manage problems for women such as prolapse and incontinence. While this treatment is successful for many women, some unfortunately have...

Menstruation and ovulation

- Menstrual cycle
  The menstrual cycle is complex and is controlled by many different glands and the hormones that these glands produce.

- Menstruation – amenorrhoea
  Some women are more at risk of amenorrhoea (the absence of periods) because of emotional stress or changes in weight.

- Menstruation - athletic amenorrhoea
  Women who are athletes or who exercise a lot on a regular basis are at risk of developing athletic amenorrhoea, which is the absence of periods.

- Menstruation - pain (dysmenorrhoea)
  Women of any age can experience painful periods and some women find periods are no longer painful after pregnancy and childbirth.

- Ovulation
  The female body shows several signs of ovulation and you may experience some or all of these signs.

- Ovulation pain
  Ovulation pain is usually harmless, but can sometimes indicate various medical conditions such as endometriosis.

- Premenstrual syndrome (PMS)
  Most menstruating women have some form of premenstrual syndrome (PMS).

- Toxic shock syndrome (TSS)
  If you think you could have toxic shock syndrome, stop using tampons immediately and go to the emergency department of your nearest hospital.

Menopause

- Hormone replacement therapy (HRT) and menopause
  Hormone replacement therapy (HRT) can reduce menopausal symptoms, but the benefits and risks need to be considered carefully.

- Menopause
  Menopause is a natural occurrence and marks the end of a woman’s reproductive years.
The use of complementary therapies to manage menopausal symptoms is popular, but the sources of information available to consumers are of variable quality and reliability.

- **Menopause and osteoporosis**
  Regular weight-bearing exercise and maintaining a diet rich in calcium from childhood will help reduce bone loss at menopause.

- **Menopause and sexual issues**
  Menopause, the final menstrual period, is a natural event that marks the end of a woman's reproductive years.

- **Menopause and weight gain**
  Weight gain at menopause can be managed using healthy eating and exercise; HRT may also be beneficial.

- **Premature and early menopause**
  The symptoms of premature or early menopause are the same as for menopause at any age.

**Fertility, pregnancy and childbirth**

- **Abortion**
  All women should have access to accurate information about abortion so they can make their own informed decisions.

- **About pregnancy and birth services in Victoria (video)**
  Victoria's pregnancy, birth and maternal services, help from planning a pregnancy through to giving birth and caring for a newborn.

- **Age and fertility**
  Age affects the fertility of both men and women, and is the single biggest factor affecting a woman's chance to conceive and have a healthy baby.

- **Assisted reproductive technology – IVF and ICSI**
  IVF (in-vitro-fertilization) and ICSI (intracytoplasmic sperm injection) are assisted reproductive treatment (ART) procedures in which fertilisation of an egg occurs outside the body.

- **Contraception after an abortion**
  Whether you have a surgical or medical abortion you can become fertile again very soon after the abortion, so it's important to start using contraception immediately if you wish to prevent any...

- **Contraception - choices**
  The method of contraception you choose will depend on your general health, lifestyle and relationships.

- **Ectopic pregnancy**
  Ectopic pregnancy is caused by a fertilised egg not being able to move through the fallopian tube.

- **Endometriosis - know the facts (video)**
  Learn some facts about endometriosis. We debunk some myths and explore symptoms, diagnosis and treatment options for women.

- **Infertility in women**
  The odds of a young fertile couple conceiving by having sexual intercourse around the time of ovulation are approximately one in five every month.

- **Miscarriage**
  A range of feelings is normal after a miscarriage, and they often linger for some time.

- **Molar pregnancy**
  Most molar pregnancies are diagnosed when bleeding early in pregnancy prompts an ultrasound scan.

- **Placental abruption**
  Placental abruption means the placenta has detached from the wall of the uterus, starving the baby of oxygen and nutrients.

- **Placenta previa**
  Placenta previa means the placenta has implanted at the bottom of the uterus, over the cervix or close by.

- **Pregnancy - obstetric emergencies**
  An obstetric emergency may arise when a woman is pregnant, or during her delivery. In this case, extra care is needed. A woman may need a lot of tests and treatments, and extended hospital stays. She...

- **Pregnancy - pre-eclampsia**
There is no evidence that pre-eclampsia is caused by emotional stress, working too hard or not getting enough rest.

- **Pregnancy stages and changes**
  It’s helpful to have an idea of how your body may react to the different stages of pregnancy. It also helps to know how pregnancy may affect your emotions and feelings.

- **Pregnancy testing**
  Sometimes, a home pregnancy test may be positive when a woman isn’t pregnant.

- **Twins - identical and fraternal**
  Multiple births are more common due to the advancing average age of mothers and the rise in assisted reproductive techniques.

- **Weight, fertility and pregnancy health**
  Compared with women in the healthy weight range, women who are carrying extra weight are less likely to conceive.

**Breast**

- **Breast awareness**
  Women should become familiar with the normal look, feel and shape of their breasts, so they will notice any abnormal changes.

- **Breast cancer**
  Breast cancer is the most common cancer in Australian women.

- **Breast cancer and oestrogen**
  There are different types of breast cancer, and around 70 per cent are sensitive to the female sex hormone oestrogen.

- **Breast conditions other than breast cancer**
  The vast majority of breast changes are not breast cancer, but you should always see your doctor if you notice changes in your breasts.

- **Breastfeeding**
  Breastfeeding positioning and attachment come naturally to some babies and mothers, but many need time and practice to get it right.

- **Breast implants and mammograms**
  Most women who have breast implants will be able to have regular screening mammograms.

- **Breast implants and your health**
  Complications can occur with all types of breast implants, but recent improvements have made breast implants safer.

- **Breast implants (augmentation)**
  Breast implants are inserted under the skin to create larger breasts.

- **Breast reduction for women**
  Breast reduction surgery removes excess breast fat, glandular tissue and skin to achieve a breast size in proportion with your body.

**Fallopian tubes and ovaries**

- **Ectopic pregnancy**
  Ectopic pregnancy is caused by a fertilised egg not being able to move through the fallopian tube.

- **Endometriosis - know the facts (video)**
  Learn some facts about endometriosis. We debunk some myths and explore symptoms, diagnosis and treatment options for women.

- **Fallopian tube cancer**
  Fallopian tube cancer is one of the rarest gynaecological cancers.

- **Ovarian cancer**
  Many women with early stage ovarian cancer may not have any symptoms.

- **Polycystic ovarian syndrome (PCOS)**
  Polycystic ovarian syndrome is a hormonal condition associated with irregular menstrual cycles, excess hair growth, acne, reduced fertility, and increased risk of diabetes and mood changes.

- **Pregnancy - obstetric emergencies**
An obstetric emergency may arise when a woman is pregnant, or during her delivery. In this case, extra care is needed. A woman may need a lot of tests and treatments, and extended hospital stays. She...

- **Pregnancy stages and changes**
  It’s helpful to have an idea of how your body may react to the different stages of pregnancy. It also helps to know how pregnancy may affect your emotions and feelings.

- **Salpingitis**
  Salpingitis is one of the most common causes of female infertility and may permanently damage the fallopian tubes.

**Uterus and cervix**

- **Cervical cancer**
  All women aged between 25 and 74 are advised to have Cervical Screening Tests every 5 years, new tests help identify HPV or cervical cancer.

- **Cervical screening tests**
  The cervical screening test protects up to 30 per cent more women than the Pap test.

- **Contraception - vaginal ring**
  The vaginal ring works in a similar way to the oral contraceptive pill to prevent pregnancy.

- **Endometriosis**
  Endometriosis is a painful condition that may be treated with medications or surgery.

- **Endometriosis - know the facts (video)**
  Learn some facts about endometriosis. We debunk some myths and explore symptoms, diagnosis and treatment options for women.

- **Fibroids**
  Often, fibroids do not cause any problems, but they are occasionally associated with infertility, miscarriage and premature labour.

- **Prolapsed uterus**
  The pelvic floor and associated supporting ligaments can be weakened or damaged in many ways, causing uterine prolapse.

- **Retroverted uterus**
  Painful sex may be caused by a retroverted uterus.

- **Uterine cancer**
  Uterine cancer is one of the most common gynaecological cancers.

- **Uterine inversion**
  Uterine inversion means the placenta fails to detach from the uterine wall, and pulls the uterus inside-out as it exits.

**Pelvis, vagina and vulva**

- **Bacterial vaginosis**
  Bacterial vaginosis (BV) is caused by an imbalance of the bacteria normally present in the vagina.

- **Bladder prolapse**
  Bladder prolapse is when the bladder bulges into the vagina.

- **Cosmetic genital surgery - labioplasty and phalloplasty**
  Cosmetic genital surgery involves reshaping the labia, vulva or penis to alter their size or shape.

- **Cysts**
  Cysts may be as small as a blister or large enough to hold litres of fluid.

- **Female genital cutting or circumcision (FGC)**
  Female genital cutting or circumcision (FGC) involves the cutting or altering of the external female genital organs.

- **Labial adhesions**
  Labial adhesions are more common during the nappy years, but poor hygiene may be a cause in older girls.

- **Pelvic inflammatory disease (PID)**
  Learn some facts about endometriosis. We debunk some myths and explore symptoms, diagnosis and treatment options for women.
Pelvic inflammatory disease (PID) occurs when an infection spreads from the vagina to the cervix and fallopian tubes.

- Rectocele
  A rectocele is when the rectum protrudes into the vagina.
- Vaginal bleeding - irregular
  If you suffer from ongoing vaginal bleeding problems, see your doctor.
- Vaginal cancer
  Some vaginal cancers have no symptoms in their early stages, and only cause symptoms once they have invaded other parts of the body.

Reproductive and contraception

- Assisted reproductive technology – IVF and ICSI
  IVF (in-vitro-fertilization) and ICSI (intracytoplasmic sperm injection) are assisted reproductive treatment (ART) procedures in which fertilisation of an egg occurs outside the body.
- Caesarean section
  A caesarean section is usually performed when it is safer for the mother or the baby than a vaginal birth.
- Contraception - tubal ligation
  Sterilisation is a permanent method of contraception that a woman can choose if she is sure that she does not want children in the future.
- Dilatation and curettage (D&C)
  A dilatation and curettage (D&C) is an operation performed on women to lightly scrape away the womb lining.
- Endometriosis - know the facts (video)
  Learn some facts about endometriosis. We debunk some myths and explore symptoms, diagnosis and treatment options for women.
- Hysterectomy
  The conditions that prompt a hysterectomy can often be treated by other means, and hysterectomy should only be a last resort.

Related Information

- Age and fertility
  Age affects the fertility of both men and women, and is the single biggest factor affecting a woman's chance to conceive and have a healthy baby.
- Weight, fertility and pregnancy health
  Compared with women in the healthy weight range, women who are carrying extra weight are less likely to conceive.
- Caesarean section
  A caesarean section is usually performed when it is safer for the mother or the baby than a vaginal birth.
- Infertility in men
  A couple isn't suspected of fertility problems until they have tried and failed to conceive for one year.
- Infertility in women
  The odds of a young fertile couple conceiving by having sexual intercourse around the time of ovulation are approximately one in five every month.

Related information on other websites

- Westmead Fertility Centre
- Women's Health Queensland Wide – Emotional aspects of infertility

Support Groups

- AccessAustralia
- Melbourne IVF Patient Support Groups

Content Partner

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