The process of storing samples is done by freezing or cryopreservation.

As society and governments slowly change their attitudes toward same-sex and transgender relationships, and laws are changed to reflect these attitudes, it is to be hoped that more transgender people will fulfill the role of parent. I certainly hope the view that "losing the right to reproduce is the price one pays to transition" will disappear and that medical professionals will start to have conversations about future parenting with transgender people prior to transition.

Transgender people wishing to transition usually start on hormone therapy as part of the transition process. Many personal, social and medical issues may arise during transition and the last thing a person may ponder is their desire for offspring, now or in the future. With technology as it stands at present it is certainly possible for a person to bank semen, eggs or embryos for future use. The collection of these is best done before commencing hormone therapy.

In this article I will discuss the different methods for obtaining and storing eggs or semen/sperm and ways in which these may be used for assisted reproduction. I am not an expert on assisted reproduction and strongly urge those interested to discuss it with their doctors or health care professionals.

Sperm Banking / Semen Cryopreservation for Transgender Women (Male to Female)

The collection and storage or "banking" of sperm has been available since the 1950s. To date semen/sperm samples have been stored for over twenty years and successfully used. The process of storing samples is done by freezing or cryopreservation. Therefore the storage of sperm is called semen cryopreservation, but it is more commonly known as sperm banking. Semen is the name given to the ejaculate from the penis. Sperm is only part of this fluid. The terms "semen" and "sperm" are often interchanged even though this is not correct usage. In this article I will use the term "sperm" to mean either semen or sperm, as this is the term most commonly used in informational literature.

The feminising hormones taken as part of transition for M.T.F.s decrease sperm production (hypospermatogenesis), and can ultimately lead to no sperm being produced (Azoospermia). Stopping feminising hormones can allow sperm to be produced again, but the amount of time the hormones have been taken may affect the amount of sperm and/or quality of sperm produced. It is possible, if a person has not been producing sperm for a long time that this may be irreversible. The amount of time it takes for a person's sperm production to return or the long-term effects of feminising hormones on sperm production is not known. Obviously if gender reassignment surgery has occurred and the testes have been removed this creates a permanent state of sterility.

If a transgender woman wishes to have a baby and has a female partner, the first option would be to stop taking feminising hormones and see if sperm production returns so that the female partner could be impregnated without assistance. This option may not appeal to some people as ceasing the hormones and the return of sperm production will also involve the return of other male physical characteristics. The collection and storage of sperm for future use may, therefore, be a more appealing option.

The sperm is stored frozen at private facilities set up for assisted reproduction or in vitro fertilisation (I.V.F.). Prior to donation a negative test result for H.I.V. may be required. A positive result of the H.I.V. test may not disqualify the donor from banking sperm, but it will be segregated from other donations. The sperm sample is usually produced by masturbation into a small sterile container. This is often done at the storage facility but there may be the option of bringing in the sample. As a rule the sooner the sample is frozen the better the survival rate of the sperm.

Another option for obtaining the sperm sample is testicular sperm aspiration or extraction. The technique used for testicular aspiration is quite simple and relatively free from complications. The procedure requires a local anaesthetic. A small needle is inserted just below the surface of the testis and a small piece of testis immature sperm is then extracted.
This technique is normally used for I.V.F. rather than sperm donation alone, as the sperm removed may not be fully functional, but this is an option to be discussed with the fertility service.

Once collected by whatever method the sample is frozen. There is a cost for the storage of the sperm and the storage facility needs to be kept up to date with any address changes etc.

Lack of payment of storage fees or not being kept up to date with current contact details could result in the sample being disposed of.

When the sperm is required for use it is thawed out. If the transgender woman has a female partner there are a couple of options available to the couple to bring about conception. The sperm can be introduced into the female partner via artificial insemination. This basically involves inserting the sperm sample into the vagina or near the cervix, using a gentle plastic tube or a syringe without a needle. Conception is dependent on a number of factors as with non-assisted insemination. It would be best to ensure the female partner is ovulating at the time (producing an egg), and the ability of the sperm to make it to the egg and penetrate it. The success rate for conception varies greatly but can be from ten to twenty percent success rate per attempt.

Another way that conception can occur is through in vitro fertilisation (I.V.F.). I.V.F. is a process by which egg cells are fertilised by sperm outside the womb. For this, egg samples will need to be collected from the female partner. This is through the same process used for any I.V.F., which I will discuss later in the section on egg collection and donation.

With the semen sample the sperm is separated from the semen and placed in a Petri dish around the egg. The sperm then fertilise the egg by penetrating it, or the sperm can be injected into the egg (a process called intracytoplasmic sperm injection). The fertilised egg is then observed to ensure it is viable (going to produce a foetus). The egg is then inserted into the female partner's womb for three to five days. Success rates vary from ten to fifty percent per cycle, or attempt. As with any attempts at becoming pregnant this can take a number of cycles or attempts. (At the end of article I will list possible costs for the different procedures discussed.)

For a transgender woman (male-to-female) with a male partner the options are far more limited in Australia. They would need to follow the procedures adopted by male same-sex couples in Australia. They would need to find an egg donor and a surrogate mother to carry the child. They could use stored sperm for this.

New South Wales has no current legislation regarding surrogacy and it is therefore not specifically prohibited but operates under the National Health and Medical Research Council ethical guidelines.

The N.S.W. Law Reform Commission Report (1988) recommended commercial surrogacy be "prohibited by law and non-commercial surrogacy not be encouraged". As in all States of Australia, when surrogacy arrangements are made, the birth parents are lawfully deemed to be the legal parents. This may bring up some difficult legal situations.

**Egg Banking / Oocyte Cryopreservation for Transgender Men**

There are a number of options available to a transgender man. The collection of unfertilised eggs (oocytes) is much newer technology. The freezing of embryos has been used successfully for decades. Again, these options would be best thought of before commencing masculinising hormone therapy.

The taking of male hormones decreases egg production from the ovaries and will lead to cessation of egg production and amenorrhoea (no periods). This is, however, considered a reversible situation.

How long it will take for ovulation and periods to return if hormones are stopped is, however, an individual response and will also depend on how long a person has been on the hormones. If the ovaries have been removed as part of gender reassignment, this creates a permanent state of infertility.

The first possible option is, if the ovaries are still intact and a transgender man wishes to conceive and carry the baby (depending on his age, fitness and any other normal considerations for pregnancy), the first thing to attempt could be to stop taking hormones and see how long it takes for periods to return.

If the transgender man has a male partner it would then be a matter of sexual intercourse or artificial insemination and, it is to be hoped, conception.

If the transgender man has a female partner but wants to carry the baby the couple need to find a sperm donor. Then fertilisation could occur by whatever method the parties agree upon (assisted fertilisation at home or at a clinic).

If it is decided that a person wants to bank eggs for future use then the person will require the help of a fertility and reproductive assistance service, e.g. I.V.F. service.

For either of the two processes I am about to discuss, the transgender man's eggs will need to be collected and stored.

The process of collecting or "harvesting" eggs normally involves the person going on a course of hormones or fertility drugs to stimulate egg production. Normally a person produces only one egg a month from one ovary. The aim of giving hormones is to have multiple eggs produced at the same time.

These fertility drugs may be given as a nasal spray, tablets or by injection. The drugs can affect a person and they do have side-effects. For the transgender man I should point out that the information I have found is for someone who has never been on masculinising hormones. I am unsure of the type of fertility drugs or the side-effects experienced if a person has been on masculinising hormones.

Blood hormone levels will be monitored to detect when the eggs are mature. An ultrasound scan confirms that the eggs are ready to be
retrieved. Shortly thereafter the patient will be sedated and the doctor will remove the eggs from the ovaries using a fine, hollow, needle. Another ultrasound helps the doctor to locate the eggs.

The eggs can then be frozen (Oocyte cryopreservation) for future use, or used as a fertilised egg for embryo freezing. To fertilise the eggs there would need to be a sperm donor.

For the transgender man with a female partner there is also the option for the partner to carry the baby. This option may appeal to some. In the case where the embryos have been frozen and stored earlier it means the transgender man does not need to cease masculinising hormones or go through the pregnancy. Be aware, however, that in Australia the person who carries and births the baby is the legal parent.

I.V.F. has been successfully used since the late 1970s. This originally involved the fertilisation of the egg outside the body, the egg being kept incubated for several days until it was deemed the egg was successfully fertilised, then the embryo was replanted in the woman.

The ability to freeze embryos successfully and use them at a later date has also been used for decades. Embryos have been successfully used after being frozen for up to ten years. At present five to ten years storage time is considered safe for a viable embryo to be used. For embryo freezing from a known donor it is advisable to have a clear understanding of the future use of these embryos.

The process of freezing an unfertilised egg is much newer technology with the first successful use of a frozen egg used for I.V.F. in 1986. The success rates remained quite low until the past few years when the freezing technology was improved. Due to this relatively new change in the technique of freezing eggs it is difficult to say how long eggs can be successfully stored. Potentially up to a decade but at this stage it cannot be stated with confidence.

Success rates for either type of freezing and implantation are anywhere from ten to fifty percent. This is dependent on many factors and is an averaged figure. For example, one person's cycle of I.V.F. may have 100 percent success then the next may have none.

**Cost of Cryopreservation and/or I.V.F.**

The costs of services given below are only an approximate guide. Each facility will charge different fees. The prices given are also pre-Medicare rebate (where possible), and private health insurance fund rebate.

Medicare and private health insurance funds will need to be checked by the individual or couple before commencing the processes.

Costs may also vary depending on the number of attempts at I.V.F. or other services are required. Nor have the costs of an anaesthetist, where required, been taken into account.

**Costs for I.V.F. and Cryopreservation Processes**

Sperm banking: The cost for storage of sperm varies depending on the facility but as a rule will be anywhere from $300 to $400 per year.

Sperm aspiration: Approximate cost $1000 - $1500 plus storage or banking costs if stored.

I.V.F. costs: I.V.F. including egg stimulation, collection and insertion can cost from $15,000 to $20,000. Total expense will depend on the type of procedure required and the number of attempts.

Egg banking or embryo storage: $300 to $500 a year.

As I wrote this article it became more and more complex, trying to cover all situations. As we know, gender is not the same as sexuality so there are many different possible fertility situations to consider. I apologise if I have left any couples or combinations out. I have not touched on people’s moral or religious stances on embryo freezing nor the legalities associated with using sperm donors. These all need to be investigated or thought about before commencing procedures.

I do hope, however, that this encourages a few people to think about their right and ability to have children so that they may have these conversations with their health care provider.

The information in this article does not represent the views of Polare or the Gender Centre, the article is intended only as advice. Any questions or concerns should be directed to your health care provider.

**Note:** Medicare does provide a rebate for some I.V.F. procedures at a rate of 75 percent of the scheduled fee for inpatient procedures and 85 percent of the scheduled fee for outpatient. To check what procedures attract a rebate and the scheduled fee for each procedure, visit go to the Department of Health and Aging website and enter search terms such as “assisted reproductive technology” or I.V.F.

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**Maggie Smith R.N.**

Maggie was born in Brisbane and grew up on Stradbroke Island and moved to Sydney in 1996. She has been a nurse for over twenty years and is currently working as a clinical nurse specialist in sexual health and H.I.V. services. Through this role she was introduced to the transgender community and the specific, specialised and often under-resourced area of health care and education. She is committed to improving access, knowledge and skills in health care to the transgender community especially within sexual health and is especially passionate about raising awareness within the medical and nursing field of the need for improved health services to the transgender community. As a member of the Gender Centre’s Management Committee for
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The Gender Centre is committed to developing and providing services and activities, which enhance the ability of people with gender issues to make informed choices. We offer a wide range of services to people with gender issues, their partners, family members and friends in New South Wales. We are an accommodation service and also act as an education, support, training and referral resource centre to other organisations and service providers. The Gender Centre is committed to educating the public and service providers about the needs of people with gender issues. We specifically aim to provide a high quality service, which acknowledges human rights and ensures respect and confidentiality.