Pretoria
Fertility Centre

Information Booklet

Exploring the causes of infertility and treatment options

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“Faith is taking the first step
even if you don’t see the whole staircase”

-Martin Luther King-

This leaflet explores the causes of infertility and treatment options offered at PFT. The clinic’s program is committed to a patient –friendly, warm approach with new and exciting developments in the fertility field.

It is important for patients to realize that the programs are intense, both physically and emotionally but PFC embarks this journey alongside its patients.

Maintaining clear communication between medical staff and the patient couple is crucial. Questions or concerns should be relayed to any member of the team. All communication is conducted using only one surname per couple.

Causes of infertility

- Infertility is generally defined as the inability to conceive after one year of trying to fall pregnant.

- Most couples who experience difficulties conceiving are infertile or sub-fertile (having a reduced chance of conceiving spontaneously naturally). The majority of couples retain the likelihood of having a baby with treatment.

- The most common known causes of infertility are:

❖ spermatozoa defects (male factor)
❖ ovulatory disorders
❖ tubal diseases
❖ endometriosis
❖ unexplained infertility

Infertility treatments and procedures

Over the past decade or so, improvements in techniques and procedures regarding reproductive medicine have increased the variety and availability of procedures to assist couples with conceiving. The treatment recommended for each patient couple will depend on the individual couple's particular diagnosis.

Treatment may include hormone therapy, followed by either timed intercourse (TI); intra-uterine insemination (IUI); in vitro fertilization (IVF); intra-cytoplasmic sperm injection (ICSI) or testicular sperm aspiration (TESA) and embryo transfer (ET).

Various tests need to be performed in order to determine male partner status and exclude abnormalities of the uterus, ovaries and fallopian tubes. This information will enable the doctor to recommend appropriate treatment options for the patient couple.

Often the doctor might at first decide on a less invasive treatment plan.

However, if the treatment does not result in pregnancy after several cycles, the team of fertility experts would likely recommend alternative treatment.

The treatment plan depends on the diagnosis, patient age, and duration of infertility as well as the specific needs of the couple.

1. Intra-uterine insemination (IUI)

This procedure, also known as "artificial insemination", involves placing washed sperm into the uterus with a small catheter through the cervix, introducing a quantity of semen into the female partner's uterus, thereby encouraging fertilization.

Sperm from the partner or from frozen donor sperm may be applied, depending on the specific needs.

Investigations should ideally indicate that the female ovulates normally and has unobstructed tubes.

IUI procedure is indicated in the following instances:

- Mild male factor
- Infertility of unknown origin
- Failure of ovulation induction
- Mild cases of endometriosis

- Anti-sperm antibodies

Variations in the procedure include taking medications to produce multiple follicles and the release of more than one egg in order to achieve fertilization. Fertility hormones can produce several eggs. During this drug-treatment phase monitoring is essential to ensure avoiding any side effects of treatment and/or the risk of multiple pregnancies.

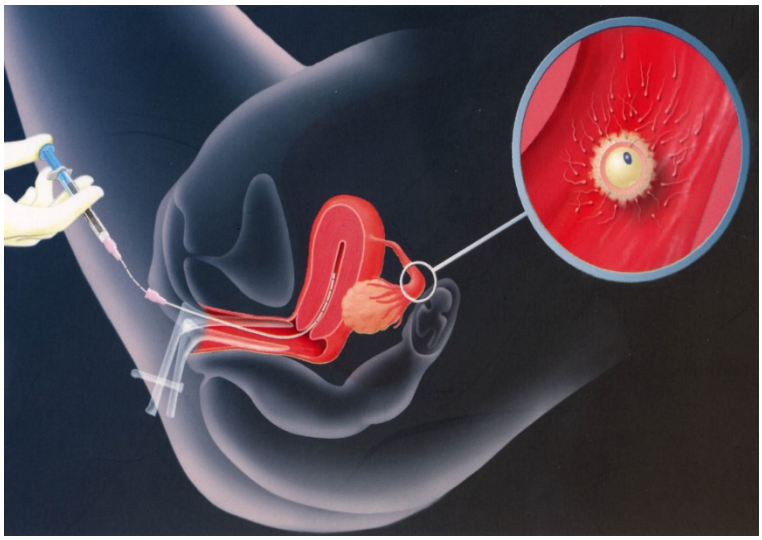
IUI relies on the natural ability of sperm to fertilize an egg within the reproductive tract. It is therefore important that tests for male infertility indicate reasonable sperm functions.

However, IUI is also a useful treatment in cases where the male partner produces an “immune” reaction to his own sperms. This defect – known as “anti-sperm antibodies” – usually means that sperms will not penetrate the cervical mucus of the female partner, and will thus not reach the egg. IUI allows prepared sperms to pass into the uterus beyond the cervix, thus possibly overcoming some of the problems related to anti-sperm antibody defects.

The success rate of IUI is between 10% and 15% per cycle, but can reach 50% after several attempts in one year. Usually three to four cycles are attempted before other treatment methods are recommended.

<u>The IUI procedure</u>

Day 1:	Call the practice to book an appointment on day 3.
Day 3:	Ultrasound to determine the presence of any ovarian cyst. Script to start with the tablets/injections for 7 days.
Day 10/11:	Ultrasound to determine for follicle development and administering of HCG when the follicle has reached a certain size.
Day 13/14:	Approximately 40 hours after the HCG the IUI is performed. The male partner is required to provide PFC with a sperm sample after three days of abstinence (no intercourse or masturbation).
Insemination:	The procedure could be compared to a pap smear. The female partner will be asked to lie down for around 10 min after the procedure. A script for progesterone tablets to start with the following day will be provided. Patient couples are encouraged to have intercourse the night after the insemination as well.
Pregnancy test:	After 12 days the laboratory slip provided on the day must be handed in at any Ampath laboratory. PFC may be contacted for the result after 3 hours.



2. In vitro fertilization (IVF)

All relevant results from previous gynecologist/s or reproductive specialist/s must be made available. All results needs to be allocated to the patient's file should different surnames be used.

A consultation with Dr Trouw, one of the fertility specialists, will be scheduled. He will direct patients to the trained staff for further information and a full comprehension of the IVF program.

In order for a pregnancy to occur, an egg must unite with a sperm. This union, called fertilization, normally occurs within the fallopian tube. During the process of IVF, however, this union takes place in the laboratory after both eggs and sperm have been collected. The duration of this development process ranges from three to five days. The embryos are then transferred to the uterus to continue growth.

The IVF procedure is indicated in the following instances:

- Tubal factor
- Male factor
- Severe degree of endometriosis
- Failed inseminations

The IVF procedure involves the following steps:

1. Oocyte induction (egg production)
2. Oocyte retrieval
3. Sperm preparation and fertilization of the oocytes
4. Embryonic growth and embryo transfer
5. Monitoring until pregnancy is detected.

2.1 Oocyte induction

The aim of oocyte induction is to stimulate the female in order for her to produce follicles containing oocytes. The number of oocytes varies from patient to patient and may vary in the same patient during different treatment cycles.

PFC currently employs different regimes or protocols for oocyte induction. The protocol used for each female will be the appropriate one chosen by the medical team and will be determined by the patient's age and diagnosis.

Two stages of oocyte induction exist:

(a.) Ovarian stimulation and monitoring of follicles

Before the treatment cycle the female partner will start with a daily folic acid tablet or Inofolic sachet, available over the counter at any pharmacy. On day 3 of her cycle the patient will have a vaginal ultrasound to ensure the absence of any ovarian cysts in order to start the treatment.

FSH or HMG injections are administered to stimulate the ovaries into producing the follicles, which contain the eggs. This ensures the development of more than one egg in the ovaries within approximately 7 to 10 days. Treatment involves a subcutaneous injection, the self-administering of which can be learnt. The male partner can also be taught to administer these injections.

Keeping in mind that some follicles may not contain an egg and that quality is more essential than quantity.

The following side effects might occur: headaches, bloating, abdominal cramping and discomfort, blurred vision and occasionally nausea and vomiting.

There is also a possibility that ovarian hyper stimulation syndrome (OHSS) could occur through use of these injectable HMGs. This results in the patient producing a very large number of follicles and her treatment cycle may have to be cancelled.

This is a rare but serious complication of the medication and might necessitate hospitalization for treatment.

The possibility also exists that only one or two or maybe no follicles will be grown in the patient's ovaries. In such a case the treatment cycle may be cancelled.

In modern IVF treatment severe OHSS has become rare due to new stimulation techniques and more effective identification of women at risk.

The length of treatment will depend on how the patient's ovaries respond. Ovarian response will be monitored with the use of ultrasound from day 9 onward and in some cases a blood test that measures estrogen levels will be conducted.

(b) Preparation for oocyte retrieval

Once ultrasound indicates that the lead follicle has matured in size, HCG will be injected to trigger the final maturation of the egg. Thirty-six hours after the trigger injection, retrieval of the eggs is undertaken. It is crucial for this injection to remain refrigerated until time of injection. The trigger must be administered at the exact time as per instruction.

During the IVF program, medication other than that prescribed by the gynecologist should not be taken without having confirmed its safety. This is especially important after embryo transfer has been achieved.

2.2 Oocyte retrieval

The procedure itself is performed at the clinic in a procedure room close to our laboratory. The patient is admitted to the hospital, because the procedure requires local anesthesia and sedation. The sedation is done by a sedation specialist.

The patient needs to be at the hospital at 06:00, where she will be admitted to ward 9, the day ward. A Dormicum tablet will be administered as a pre-med, to ensure the patient's comfort. It is advised that a patient's life partner should accompany her at all times.

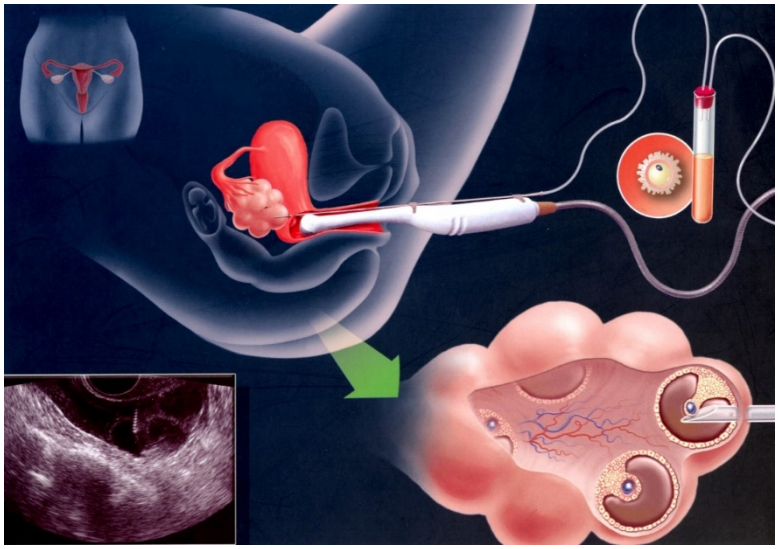
An empty bladder is essential for this procedure.

The procedure entails a needle, guided by ultrasound imaging, being inserted through the vaginal wall into the ovaries, where the follicles containing the eggs are punctured and withdrawn. The follicular fluid is collected in test tubes and examined under the microscope for the presence of oocytes.

Keep in mind that not all follicles contain an egg and in some cases no eggs might be found.

The procedure lasts approximately 10 to 15 minutes. Recovery takes place in the ward and the patient may go home after a few hours. A script for Cyclogest pessaries will be given. This should be started on the evening of the oocyte retrieval. Antibiotics that will be prescribed must be taken.

After the procedure lower abdominal pain as well as mild vaginal bleeding may be experienced for a day or two.



2.3 Sperm collection and preparation

The male partner generally collects semen through masturbation. If there are any problems with the production of a semen sample, the medical staff must be alerted before the start of treatment. It is recommended that the male partner abstains from ejaculation for two to three days prior to production of the semen for IVF.

Under certain circumstances, sperm may be obtained surgically from the testes through a procedure called TESA – testicular sperm aspiration. Obtaining fertilization in these instances necessitates a highly specialized technique requiring micromanipulation equipment.

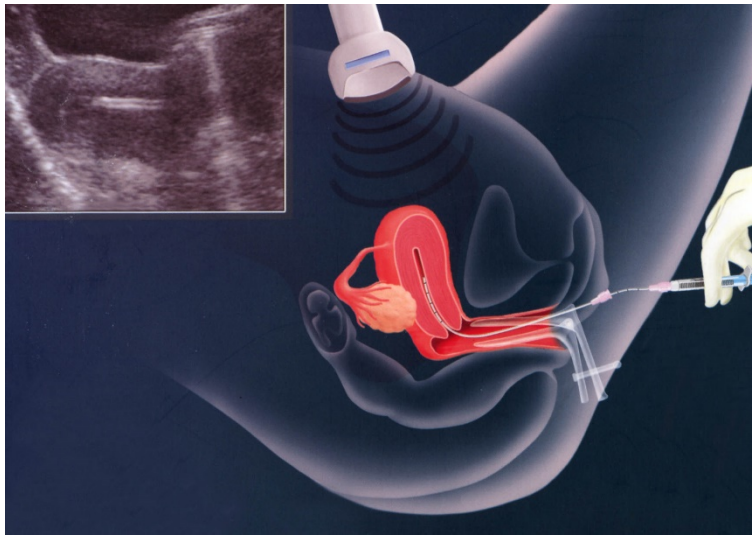
This technique is known as intra cytoplasmic sperm injection (ICSI). Using the micromanipulators, the embryologist picks up one sperm in a very fine needle and injects it into the cytoplasm of

an oocyte that is being held in position with a fine holding pipette. ICSI can also be used for semen samples with a very low sperm count and/or poor motility.

2.4 Embryonic growth and embryo transfer

Embryos will be cultured in the laboratory for three to five days. During this time the different stages of development will be monitored. The embryologist will contact the patient after two days for feedback regarding the fertilization, date and time for embryo transfer.

The patient is required to be at the clinic at the arranged time with a full bladder. This ensures the optimal uterus position for the transfer.
Embryo transfer is done under abdominal ultrasound guidance. During the procedure the patient will experience very little discomfort as the procedure could be compared to a Pap smear examination. No anesthetic or sedation is administered. The patient should refrain from any sexual intercourse until the presence of the pregnancy has been determined. No over-the-counter medicine may be used.



The patient should however continue with the Disprin/Ecotrin, Folic acid and Cyclogest.

2.5 Monitoring until detection of pregnancy

The patient will be requested to undergo a blood test eight to ten days after embryo transfer in order to determine the quantity of beta HCG present. This test indicates the presence of a pregnancy. The test can be conducted at any Ampath laboratory around 8 am and PFC can be contacted after three hours for the result.

In the case of the blood test being positive, it must be repeated after 48 hours. The use of all of the medication should be continued and the first ultrasound will be booked after 2 ½ weeks.

Should the test be negative the patient will be required to discontinue all the medication and book a follow up appointment. It is not always possible to determine the reason for the cycle's being unsuccessful. IVF is not an infallible procedure and frequently more than one attempt may be necessary.

The four main factors to which a failed IVF cycle could be ascribed:

1. Female age
2. Embryo quality
3. Ovarian response
4. Implantation

During consultation all relevant factors will be discussed and a recommendation toward future treatment will be made.

SUMMARY

DAY 1:	Call to schedule appointment for day 3. Male partner to undergo semen analyses if not conducted during the last six months. Do bear in mind that menstruating after 17:00 only the following day is considered day 1 of the cycle. A light brown discharge or spotting is not considered day 1. In the case of the blood being red, it is considered day 1.
DAY 3:	Appointment – vaginal scan. Receive medication.
DAY 9-11:	Appointment – vaginal scan. Monitoring follicle growth. (Empty bladder)
DAY 13 onwards:	Oocyte retrieval. The patient will be contacted after two days to arrange the date and time of embryo transfer.
3-5 days later:	Embryo transfer. (Full bladder)
8-10 days later:	Pregnancy test at any Ampath laboratory.

EMERGENCY NUMBER STRICTLY FOR AFTER HOURS
+27 12 333 6000