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A to Z of Infertility !

President

Dr. Vaidehi Marathe

Secretary

Dr. Rajasi Sengupta

NOGS 20-21 & AMOGS PAC INITIATIVE

VOLUME - 3



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THE TEAM



DR. NANDITA PALSHETKAR
PRESIDENT AMOGS



DR. VAIDEHI MARATHE
PRESIDENT NOGS
CHAIR - PAC AMOGS



DR. ARUN NAYAK
SECRETARY AMOGS



DR. RAJASI SENGUPTA
SECRETARY NOGS

COMPILED BY



DR. AMOGH CHIMOTE



DR. RIJU ANGIK CHIMOTE



Dear Members,

It gives me immense pleasure to hand over the third volume of Patient's Information handouts which is going to be monthly feature. The third volume focuses on " Infertility issues in both men and women."

In recent years, patients have increasingly requested the opportunity to participate fully in their medical care. An important part of responding to this is providing educational handouts that inform patients about health problems, describe medical treatments, and promote healthy behaviours. They are useful extension of spoken communications and are also an extension of medical care. Spoken messages are forgotten quickly and so they need to be reinforced with the informative handouts. Educational handouts are an important part of the communication patients receive from health care providers.

This is our small effort to provide our members with these ready handouts for better communication with their patients. The member can print and use them for their patients benefit. We hope that you will find them useful.

I wish to profusely thank our young brigade – the ever enthusiast , ever ready Dr. Amogh Chimote and Dr. Riju Chimote for toiling very hard and putting it up together within a very short span of time. We deeply appreciate their super effort.

Wishing you all a very healthy patient interaction.

Sincerely,

Dr. Vaidehi Marathe

President NOGS 2020-21

Chairperson PAC AMOGS



Message from the President AMOGS...



Hello everyone,

The theme of AMOGS this year is “We for Stree”. I would like to thank every AMOGSian who has helped making every woman Safer, Stronger, and Smarter.

I would like to congratulate Dr. Vaidehi Marathe and Team NOGS for this Patient education booklet. I would also like to thank the contributors and the editorial team for their contributions towards this great booklet.

The aim of this booklet is to ensure that you are able to get basic knowledge regarding different areas of women health care. I hope this booklet helps you achieve that and clears all your doubts.

**Dr. Nandita Palshetkar
President
AMOGS.**





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WHAT IS INFERTILITY?

- **What is infertility?**

- Couples who have not conceived after one year of regular unprotected sexual intercourse
- Couples who are worried about their fertility should be informed that 84% of couples in the general population will conceive within one year if they do not use contraception and have regular sexual intercourse. Of those who do not conceive in the first year, about half will do so in the second year (cumulative pregnancy rate 92% after two years and 93% after three years).

- **How common is infertility?**

- Infertility is a global health issue, affecting approximately 8-10% of couples worldwide Reproductive Health Outlook.

- **What are the types of infertility?**

- Primary:** couple is unable to conceive after one year of regular unprotected intercourse
- Secondary Infertility:** Inability to become pregnant or to carry a baby to term after previously giving birth to a baby.
- Unexplained infertility:** It is an idiopathic infertility in the sense that its cause remains unknown even after an **infertility** work-up for male as well as female.

- **When should you go to the doctor?**

- After trying for more than a year to conceive
- Menstrual complaint (infrequent/ frequent/ heavy flow /scanty flow/ dysmenorrhea)
- Loss of libido(both male/female)
- Premature ejaculation/impotence/difficulty in establishing Intercourse (male)
- Vaginismus (female)
- Age more than 35 years (both male/female)

- **What are the cause of Infertility?**

- The causes of infertility can be broadly divided into male , female and both. Male and female infertility contribute 40% each while 20 % are unexplained causes . The most common cause of female infertility is a problem with **ovulation**. The most common cause of male infertility is a problem with **sperm** cells and how they function. Other factors that may affect fertility include age, lifestyle, and health conditions.
- Sometimes no cause of infertility is found. This is called unexplained infertility.

- Here is a list of reasons leading to infertility

Causes in Male

Sr. No.	Male causes	Reasons
1	Low /abnormal Sperm count	a) Undescended testis b) Genetic / dna damage c) Prior infection (e.g Mumps, adenovirus) d) Trauma/ Injury to the testis or groin region e) Surgery for testis or groin region f) Varicoceles (enlarged veins of the testis that increases blood flow and heat which affect the number and shape of sperm) g) Exposure to toxic substance(pesticides/radiation/ chemotherapy) h) Addictions (alcohol/ marijuana/ ganja/ tobacco/ steroid for body building) i) Working in hot/ warm environment
2	Premature ejaculation	Ejaculation of semen during sexual intercourse before or immediately after penetration
3	Damage/injury to reproductive organs	Direct injury or trauma to the testis or penis
4	Retrograde ejaculation	Semen entering the bladder instead of emerging through the penis during orgasm. Generally common in uncontrolled diabetes mellitus
5	Vasectomy	Cutting and ligating the vas deferens as a permanent method of sterilization
6	Age	Age related changes in quantity and quality of sperms, generally seen above the age of 35 years.

Causes in females

Sr no	Causes	Reasons / Consequences
1.	Hormonal issues	<p>Hormone disorder can create a great havoc and asynchrony which has a cascading effect leading to infertility</p> <p>a) Thyroid hormone: Either too much thyroid hormone or too little thyroid hormone can interfere with the menstrual cycle or cause infertility</p> <p>b) Hypothalamus pituitary ovarian axis(HPO) : ranges from improper levels of various hormones like Follicle stimulating hormone(FSH) Luteinizing hormone (LH) , Oestrogen (E2) , progesterone (P), Testosterone leading to infertility</p>
2	Structural issues	<p>a. Benign (non Cancerous tumors) like polyp/ fibroid/ adenomyoma/</p> <p>b. Blocked tube(Infection/ tuberculosis/ Pelvic inflammatory disease/ endometriosis/adhesions)</p> <p>c. Small or blocked cervix</p> <p>d. Half/double uterus or cervix</p> <p>e. Irregular / septate uterine cavity</p> <p>f) Adhesions (Bands of scar tissue)</p>
3	Ovarian factor	Diminished egg quantity/quality , premature menopause or cessation of ovulation (release of egg) primary ovarian insufficiency
4.	Age	Poor egg quality and quantity with increasing age generally seen by the age of 30 years, more common above 35 years

- **What are the common causes of infertility?**

- **Factors common to both males and females**

- Poor diet that is lacking in nutrients
- Athletic overtraining
- Stress
- Too much exposure to certain chemicals and toxins (for example, tobacco smoke, alcohol, marijuana, pesticides, radiation, and chemotherapy)
- Sickle cell disease
- Kidney disease
- Celiac disease
- Diabetes

- **How does age affect fertility?**

- For healthy couples in their 20s or early 30s, the chance that a woman will become pregnant is about 25 to 30 percent in any single **menstrual cycle**. This percentage starts to decline in a woman's early 30s. It declines more rapidly after age 37.
- By age 40, a woman's chance of getting pregnant drops to less than 10 percent per menstrual cycle. A man's fertility also declines with age, but not as predictably.

- **What are the probable signs of female infertility?**

- Irregular or absent menstrual periods
- History of pelvic infection
- Two or more miscarriages
- History of using an iud for birth control
- Sterilisation reversal
- Difficulties with sexual intercourse

- Chronic pelvic pain
 - Breast discharge
 - History of sexually transmitted disease
 - Excessive acne or facial hair.
- **Are lifestyle changes responsible for infertility in male and female?**
 - Life style changes are one of the most important parameter which affects the fertility potential of any individual.
 - **What life style modifications can help in improving chances of pregnancy?**
 - Life style changes are required in both men and women to have a better chance at achieving pregnancy. The following are some of the changes which may improve the fertility potential.
 - **Stop smoking.** Smoking affects the development and quality of sperm, decreases the sperm count and reduces the volume of semen. higher risk of impotence (erectile dysfunction).
 - **Stop alcohol intake.** Drinking alcohol affects sperm count, increases the number of abnormally shaped sperm, Keep them cool.
 - Increase your intake of folic acid (for females)
 - **Raising the temperature of the testicles can decrease sperm production and motility (the quality of movement).**

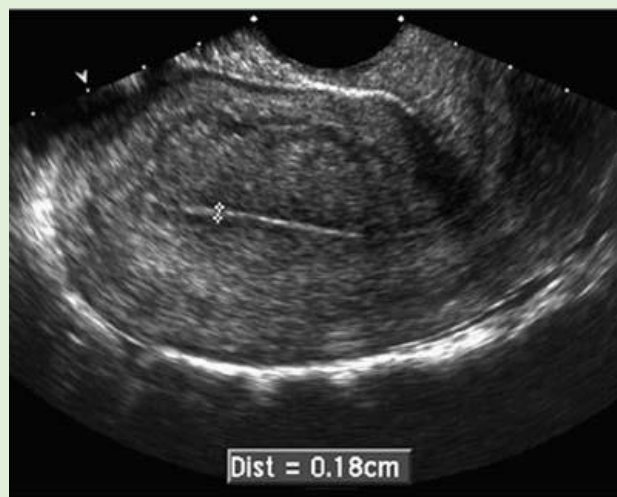
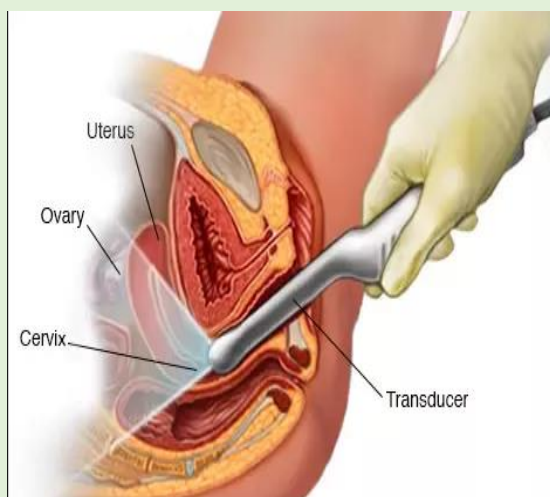
- **Well-balanced diet.** There is no special eating plan for maximising your fertility. A sensible diet that includes plenty of fruit, vegetables, grains, meat, poultry and seafood is advised.
- **Stay in a healthy weight range.** Overweight men and women may have decreased fertility. If you are overweight, losing weight may help increase your sperm count.
- **Exercise with caution.** Exercising heavily every day may interfere with the regularity of the menstrual cycle. For men, prolonged cycling can cause damage to the groin and there is also the risk of damage to the testicles from contact sport
- **Cut back on caffeine:** caffeine may interfere with the natural ovulation process and even a modest amount of coffee (one or two cups daily) may decrease fertility and affect sperm count
- **Avoid using lubricants.** They often contain chemicals that can damage or kill sperm.
- **Avoid toxins.**

INVESTIGATIONS IN FEMALE

- What are the various investigations done for a female patient ?
 - Thorough History
 - Pelvic examination



- Transvaginal ultrasound(TVS)



- Routine pathology and Hormone evaluation



- **What should I expect during my first visit for infertility?**

- The first visit with a fertility specialist usually involves a detailed medical history and a physical exam. You will be asked questions about your menstrual period, abnormal vaginal bleeding or discharge, pelvic pain, and disorders that can affect reproduction, such as thyroid disease. You and your partner will be asked about health concerns, including

- Medications (both prescription and over-the-counter) and herbal remedies

- Illnesses , including STIs and past surgery

- Birth defects in your family

- Past pregnancies and their outcomes

- Use of tobacco, alcohol, and illegal drugs

- Use of marijuana (recreational or medical)

- You and your partner also will be asked questions about your sexual history, including

- Methods of birth control

- How long you have been trying to get pregnant

- How often you have sex and whether you have difficulties

- If you use lubricants during sex

- Past sexual relationships.

- **Why is pelvic examination required?**

- Pelvic examination is done to evaluate the uterus labia majora/minora , vagina or the cervix for any infection or pathology.

- **What does TVS tell me?**

- Transvaginal scan or TVS tells you about anatomical pathologies of the uterus and the adnexa as well as the ovary and helps to predict when ovulation will occur by viewing changes in the *follicles*.

- **Is TVS painful?**

- TVS may cause mild discomfort similar to a pelvic examination .

- **What hormones are tested?**

- This can also be called as baseline hormone evaluation

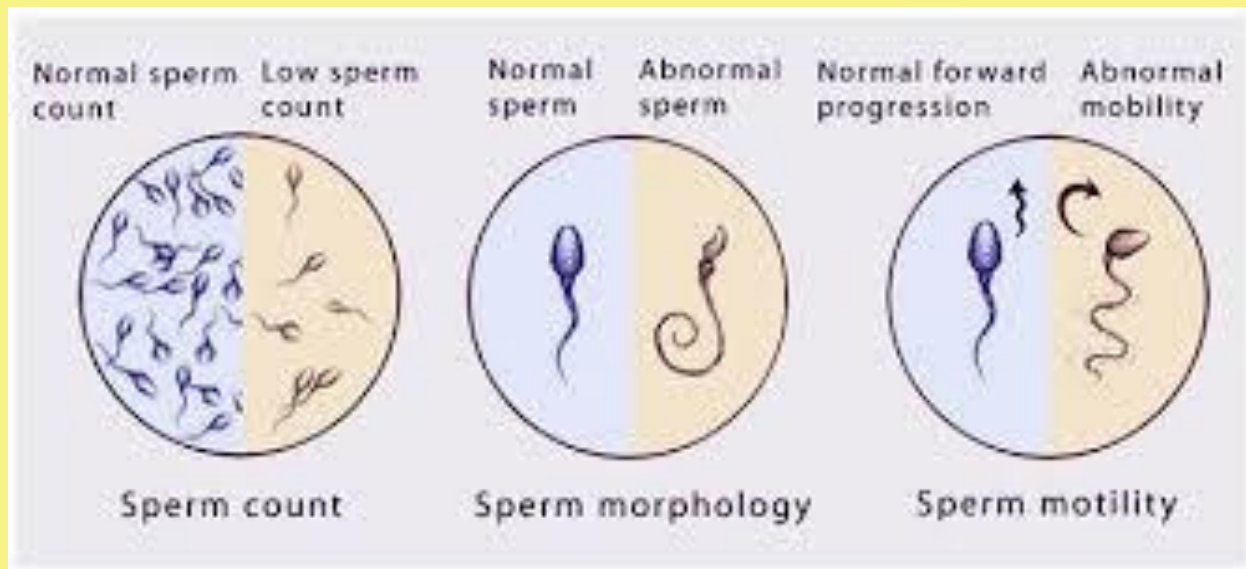
- AMH (ANTE MULLERIAN HORMONE) to check of egg reserve
- FSH (FOLLICLE STIMULATING HORMONE) to check of egg reserve
- LH (LEUTENIZING HORMONE)
- PROLACTIN (high levels may cause no ovulation)
- THYROID STIMULATING HORMONE (TSH) abnormal levels indicate faulty menstrual pattern
- TESTOSTERONE (generally high in PCOS)
- INSULIN (high level indicates high ovarian resistance to meds)
- PROGESTERONE (to check for ovulation)
- 17 HYDROXY PROGESTERONE (17 OHP)

- **When is the best time for baseline hormone?**

- Generally the baseline hormone evaluation is done between day 2 to day 5 of your menstrual cycle before 12 pm (Noon)

INVESTIGATIONS IN MALE

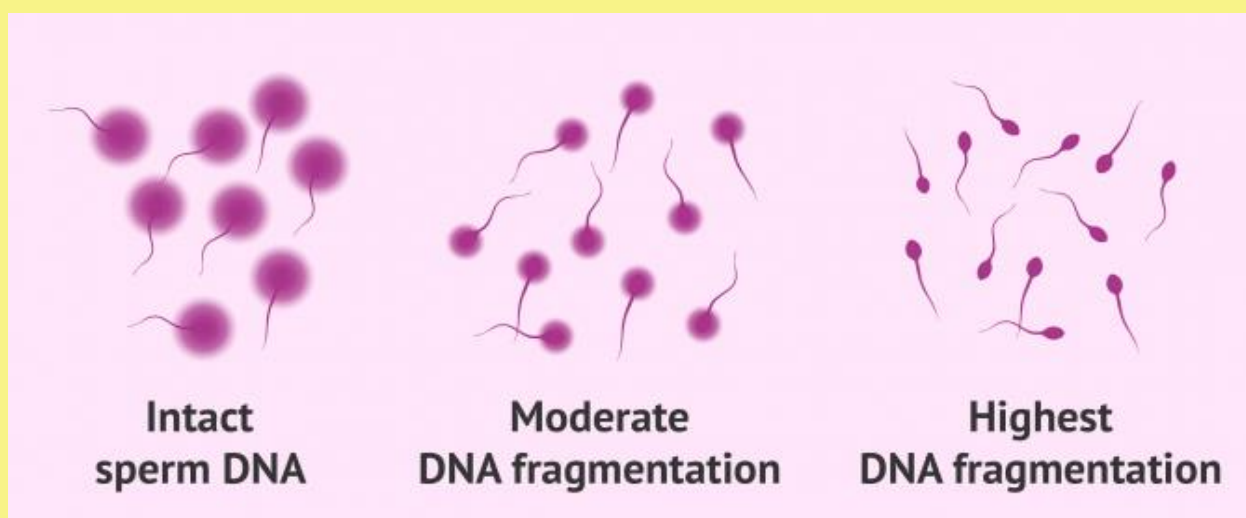
- **What are the various investigations done for a male patient ?**
 - Thorough History
 - Routine pathology
 - Semen analysis



- HOS TEST



- DNA Fragmentation Index(DFI)



PHYSICAL EXAMINATION : evaluation of size of testis, pathologies of penis and testis

- **Why is thorough history necessary ?**

- A good history helps us in diagnosing the following problems leading to infertility in male
- Impotence – inability to maintain an erection sufficient for sexual intercourse
- Failure to ejaculate, premature ejaculation or ejaculating backwards into the bladder (retrograde ejaculation)
- Presence of other diseases, such as diabetes and multiple sclerosis, can cause erection and ejaculation difficulties

- **What is semen analysis?**

- Semen analysis is the evaluation of husband's semen for the following parameters
 - Volume
 - Viscosity
 - Odour
 - Liquefaction
 - Fructose level
 - Sperm count
 - Sperm morphology
 - Motility

- **Sample collection method**

- Sample is collected after 3 to 5 days of abstinence after proper cleaning and collecting the sample by masturbation in a wide mouth sterile container properly labelled with all details of the patient.

- **Can I collect my sample at home?**

- Home sample collection is usually avoided but can be accepted if the male partner cannot deliver the sample at the hospital in a sample collection room.
- In such cases the semen sample should be brought within 30 min to the hospital. The sample container should be kept at body temperature while transportation.

- **What Investigations are required in case of low sperm count?**

- **Ultrasound:** An ultrasound examination of the testes and prostate can be useful. An ultrasound probe (slim wand) is placed on the testicles to provide a picture of the testes and the epididymis. It is also useful for diagnosing varicocele (swollen varicose veins of the scrotum).
- **Vasography:** While not used very often these days, a vasography may be useful in diagnosing an obstruction in the vas and abnormalities of the seminal vesicles and the ducts that lead out into the back of the penis.

- **Testicular biopsy**

- **This involves the removal of a small sample of the tissue from a testis using either a general or, more commonly, local anaesthetic.**

- **How does a man present with a varicocele?**

- Most commonly, he has a completely asymptomatic varicocele found during evaluation for infertility. Young men (or their primary doctors) sometimes find a mass in the scrotum either during self-exam or routine exam. Less commonly, a varicocele is found when evaluating a man suffering from pain in the scrotum.

- **What are some causes of sperm not maturing?**
 - Some treatable conditions that can cause maturation arrest include varicoceles or hormonal problems. In many cases, though, it might be an undetectable genetic defect.
- **What can a man do to improve the morphology (shape) and motility (movement) of his sperm?**
 - Semen morphology is thought to have the least effect on fertility of all of the parameters. Unfortunately, in most cases, there is no clear or specific treatment.
 - In rare cases, there may be a genetic/production problem causing the sperm shape defect. This is usually not treatable.
 - Patients are prescribed various vitamins, such as Co enzyme Q10, lycopene, Vitamin D, Folic acid. In general, we recommend a healthy lifestyle with lots of vegetables and a balanced diet with exercise.
- **What can be done in the case of low sperm motility and pus cells?**
- Low motility and pus cells can be from multiple causes. Patients should have a physical exam, hormonal testing by a fertility specialist and possibly specific testing to quantify pus cells. Based on the findings, treatment may include one or more of many routes, including medicines, vitamins, antibiotics, anti-inflammatory medications or surgery.

TUBAL PATENCY TESTS

Tubal patency tests are a set of test dynamic and physiological to determine the patency of the tube. (tube is open or blocked). These are imaging techniques which may or may not require anaesthesia.

- **What are the various tubal patency test?**

- The various tests are as follows :
- Hysterosalpingography(HSG)(most commonly used test under x ray)
- Sonosalpingography (SSG) (newer test done by Ultrasound)
- Laparoscopy (under anaesthesia , gold standard)
- Hysteroscopic bubble test or parryscopy (under anaesthesia)

- **How is HSG done?**

- HSG is done in a hospital, clinic. It is best to have HSG done in the first half (days 5–12) of the menstrual cycle. This timing reduces the chance that you may be pregnant.
- During HSG, a **contrast medium** (dye) is placed in the uterus and fallopian tubes. The dye shows up in contrast to the body structures on an X-ray screen. The dye outlines the inner size and shape of the uterus and fallopian tubes. It also is possible to see how the dye moves through the body structures.
- The following are the steps fro HSG
- Usually anesthesia is not required for this procedure.
- You'll be asked to lie down with your back on the table and your knees bent and your feet spread under a C arm / X ray machine

- Once you are ready, the doctor will gently insert a speculum into your vagina, so that the cervix can be seen.
- You may feel a little discomfort at this point.
- The cervix is then cleaned with an antiseptic solution.
- A small catheter is inserted in the cervix which may cause a small tug and the position is confirmed under the x ray
- A small amount of dye is injected in the catheter and the uterine cavity and the tube are visualized which is then captured on the x ray.
- If the tubes are blocked then the dye spillage will not be seen indicating blocked tubes, if tubes are open the dye will be seen surrounding the uterus from the outside

- **What should I expect after the procedure?**
 - After HSG, you can expect to have a sticky vaginal discharge as some of the fluid drains out of the uterus. The fluid may be tinged with blood. A pad can be used for the vaginal discharge. Do not use a tampon. You also may have the following symptoms:
 - Slight vaginal bleeding
 - Cramps
 - Feeling dizzy, faint, or sick to your stomach

- **What are the risks associated with HSG?**
 - Severe problems after an HSG are rare. They include an allergic reaction to the dye, injury to the uterus, or pelvic infection. Call your health care provider if you have any of these symptoms:
 - Foul-smelling vaginal discharge
 - Vomiting
 - Fainting
 - Severe abdominal pain or cramping
 - Heavy vaginal bleeding
 - Fever or chills

- **How is SSG performed?**

- SSG is procedure is similar to HSG but instead of x ray an ultrasound probe is inserted in the vagina and Normal saline is injected in the catheter placed in the cervix.
- If the tubes are open then the flow of the normal saline shows the filling of the tubes and spillage of the fluid is seen in the pelvic cavity.
- If the tubes are blocked then no spillage can be seen in the ultrasound.

- **What are the instructions after the procedure?**

- After the procedure you will be asked to rest in a recovery room for a while.
- You can have a light meal if you wish and head home in about two hours.
- While you can resume your normal daily routine you may experience a little discomfort.
- You can resume normal activities and diet after the procedure.

LAPAROSCOPY AND HYSTEROSCOPY

Laparoscopy and hysteroscopy is an invasive diagnostic test for finding and treating the cause of infertility at the same time. It a procedure which is done under anaesthesia but a day-care procedure which means you will be discharged on the same day.

- **How is laparoscopy done?**

- Laparoscopy is usually performed on an outpatient basis under general anesthesia. After the patient is under general anesthesia, a needle is inserted through the navel and the abdomen is filled with carbon dioxide gas.
- The gas pushes the internal organs away from the abdominal wall so that the laparoscope can be placed safely into the abdominal cavity to decrease the risk of injury to surrounding organs such as the bowel, bladder, and blood vessels.
- The laparoscope is then inserted through an incision in the navel. Occasionally, alternate sites may be used for the insertion of the laparoscope based upon physician experience or the patient's prior surgical or medical history.

- **Why should I undergo Diagnostic laparoscopy?**

- Your doctor can see the reproductive organs including the uterus, fallopian tubes, and ovaries for presence of any pathology like a fibroid, infection, structural abnormality, adhesions. Additionally, a solution containing blue dye is often injected through the cervix, uterus, and fallopian tubes to determine if they are open. If no abnormalities are noted at this time, one or two stitches close the incisions. If defects or abnormalities are discovered, diagnostic laparoscopy can become operative laparoscopy.

- **What is operative Laparoscopy?**

- If there is a suspicion of pathology in the reproductive organs the surgeon inserts additional instruments such as probes, scissors, grasping instruments, biopsy forceps, electrosurgical or laser instruments, and suture materials through two or three additional incisions. Operative laparoscopy includes management of certain pathologies such as removing adhesions from around the fallopian tubes and ovaries, opening blocked tubes, removing ovarian cysts, and treating ectopic pregnancy. Endometriosis can also be removed or ablated from the outside of the uterus, ovaries, or peritoneum. Fibroids if on the uterus can also be removed.

- **What are the chances of complication in a case?**

- When all possible complications are considered, one or two women out of every 100 may develop a complication, usually of minor consequence.

- **What are the risks of laparoscopy?**

- There are certain risk ranging from mild to severe. These are as follows
- Vascular injuries: injury to a major/ minor blood vessel (Severe)
- Injury to adjacent organs such as bowel, bladder, ureter (Severe)
- Hematomas of the abdominal wall can occur near the incisions. (Moderate)
- Pelvic or abdominal infections may occur. (Moderate)
- Allergic reactions, nerve damage, and anesthesia complications rarely occur (Mild)
- The risk of death as a result of laparoscopy is very small (around 3 in 100,000)
- Postoperative urinary retention is uncommon
- Venous thrombosis is rare

- **What is Diagnostic Hysteroscopy?**

- Hysteroscopy is a useful procedure to evaluate women with infertility, recurrent miscarriage, or abnormal uterine bleeding.
- A diagnostic hysteroscopy is used to examine the uterine cavity , and is helpful in diagnosing abnormal uterine conditions such as internal fibroids, scarring, polyps, and congenital malformations.

- **How is Diagnostic Hysteroscopy done?**

- It is a procedure done under anaesthesia or sedation in which a small Hysteroscope (a long, thin, lighted, telescope-like instrument) of roughly 3 mm is inserted in the vagina and normal saline is used to dilated or balloon the vagina. The scope is then advanced in the cervix then into the uterine cavity slowly and the entire tract evaluated for any abnormality.
- Skin incisions are not required for hysteroscopy.
- The procedure takes 3 to 10 min depending on the skill of your doctor.

- **When is the appropriate time for hysteroscopy?**

- Hysteroscopy is generally performed soon after the bleeding stops after menses to day 12 of your menses.

- **What is operative hysteroscopy?**

- Use of instruments to treat the pathologies in the cervix and the uterus is called as an operative hysteroscopy.
- It is generally done for the following pathologies
 - Polyp
 - Adhesions
 - Uterine anatomical defects

- Cervical adhesions
- Scar tissue removal
- Determining tubal patency.

- **What are the risks of Hysteroscopy**

- Complications of hysteroscopy occur in about two out of every 100 procedures. Perforation of the uterus (a small hole in the uterus) is the most common complication.
- Although perforations usually close spontaneously, they may cause bleeding or damage to nearby organs, which may necessitate further surgery.
- Uterine adhesions or infections may develop after hysteroscopy.
- Serious complications related to the fluids used to distend the uterus include fluid in the lungs, blood clotting problems, fluid overload, electrolyte imbalance, and severe allergic reactions.
- Severe or life-threatening complications, however, are very uncommon. Some of the complications above may prevent completion of the surgery.

- **What should I expect after a hysteroscopy**

- Following hysteroscopy, some vaginal discharge or bleeding and cramping may be experienced for several days.
- Most physical activities can usually be resumed within one or two days.
- You should ask your physician when to resume sexual intercourse.
- If a Foley catheter is left in the cavity, it is usually removed after several days.
- Estrogen may be prescribed for several weeks after surgery.

INTRA UTERINE INSEMINATION

- **What is intrauterine insemination?**
 - It is a form of artificial insemination A procedure where sperm are placed into the female reproductive system by a means other than intercourse. Intrauterine insemination (IUI) is the most common form of AI used and involves placing sperm into the female's uterus through a catheter or a small tube. IUI is usually one of the first techniques used to assist a couple who is having difficulty becoming pregnant.
- **Which Factors Control the Success Rates of IUI?**
 - IUI success rates vary considerably and depend on many factors like:
 - Age of the woman
 - Use of any type of ovarian stimulation (drugs are given to stimulate ovulation)
 - Duration of infertility
 - Cause of infertility
 - Number and quality of motile sperms (the ability of the sperm to move)
- **Who Might Benefit with IUI?**
 - IUI can help in cases where the man has low sperm count, or poor motility where the sperms are unable to reach the egg.
 - Because sperm is placed directly inside the woman's uterus, IUI can also help couples who are unable to have intercourse because of disability, injury, or difficulties such as premature ejaculation (where a man ejaculates early).

- It is also recommended for women with mild endometriosis (tissue that looks and acts like the lining of the uterus grows outside of the uterus in other areas like ovaries, bladder, etc.).
- Is often used as the first line treatment for couples with "unexplained infertility".
- **When is IUI not recommended?**
 - IUI is not recommended for women who have severe disease of the fallopian tubes, tubal disease, a history of pelvic infections, a low ovarian reserve, or moderate to severe endometriosis.
 - While severe male factor infertility does not necessarily preclude couples from undergoing IUI, it does significantly reduce their odds of success, making IVF the preferable option.
- **What is a pre-IUI workup?**
 - A pre-IUI workup is when we make sure you are in good health, your hormone levels are normal and that your uterus can support a pregnancy. Prior to the IUI procedure, we will monitor your eggs through ultrasound and/or blood testing in order to determine the best time for injection.
- **What is done in IUI?**
 - In the procedure, warmed and 'washed' (treated) sperm are introduced into the woman's uterus through a tube. Sperm can be provided by the woman's husband or partner (artificial insemination by husband – AIH) or sperm provided by a known or anonymous sperm donor (artificial insemination by donor – AID or DI). The procedure is done around the time of ovulation to give the best chance of conception. Hormonal (fertility) medications might be used in along with the treatment to enhance conditions for a pregnancy.

- **What is the entire procedure of IUI ?**



- **OVULATION INDUCTION**

- There are four different ways your doctor may choose to conduct IUI depending on your individual situation:

- Without hormonal medications

1. In a natural cycle
2. With hormonal medications
3. Clomiphene/IUI
4. Follicle stimulating hormone – FSH/IUI
5. Follicle stimulating hormone with human chorionic gonadotrophin – FSH/ hCG /IUI

- **MONITORING OVULATION**

- Throughout this first stage, your response to FSH will be carefully monitored for ovarian hyperstimulation syndrome (OHSS) and to gain a clearer picture of what is happening to the follicles so the right timing and dose can be determined. This monitoring will be done through regular Transvaginal ultrasounds, blood tests and urine tests

- **SEMEN COLLECTION**

- **Artificial insemination by husband (AIH)**

- On the day of the insemination, the male partner will be required to produce a sample of semen by ejaculating into a sterile container. Two to three days' abstinence from intercourse/masturbation is preferred prior to the sample collection day. Clinics often provide a room so that this sample may be produced in private, but some men prefer to collect the semen at home and deliver it to the clinic. As it is being used that day it must not be frozen or refrigerated, and it needs to arrive promptly at the clinic – within a half an hour.

- **DONOR INSEMINATION (DI)**

- IUI can also be done using donor sperm, either from an anonymous or a known sperm donor (known as DI or donor insemination). Insemination with donor sperm is used when
 - no male partner
 - male partner does not produce sperm,
 - sperms are of very poor quality
 - high risk of passing on genetic diseases.
- Sperm are usually frozen ahead of time and screened for sexually transmitted diseases (e.g. HIV/AIDS/Hep/Hep C) and any genetic disorders. The semen selected for a couple closely matches, as much as possible, the male partner's characteristics, e.g. eye and hair colour, height and build.

- **SPERM PREPARATION**

- The semen is prepared in a laboratory for the next stage. In the woman's body, the cervix acts as a filter for the sperm, so only the motile sperm pass through. In the same way, during the IUI procedure the semen is 'washed' and filtered, removing any mucus and non-motile sperm. In other words, a concentrated solution containing the most active sperm is inserted. Unwashed sperm must not be placed in the uterus as severe allergic reactions can occur.
- Donor sperm are usually screened for diseases and genetic defects before being frozen. The samples are thawed and the most active sperm are separated as required.

- **INSERTION**

- On the day of ovulation, sperm insertion will take place with fresh or thawed sperm. For those using fresh sperm, you will be asked to return to the clinic one to two hours after the delivery of the sperm sample for the insertion process. This simple procedure is done without anaesthetic and is rather like having a pap smear, with a similar level of discomfort involved. An instrument called a speculum is inserted into the vagina so that the cervix (neck of the uterus) can be seen. A narrow tube attached to a syringe is gently pushed through the cervix into the uterus. The sperm are then injected into the uterus. It is usually not painful but occasionally some mild cramping or discomfort may occur. You will be asked to remain lying down for around 10–20 minutes and then you will be able to resume your normal routine.

- **When is the best timing for an IUI?**

- Ideally an IUI should be performed within 6 hours of ovulation. Typical timing would be to have a single IUI at about 36 hours post-hCG, If two IUIs are scheduled, they are usually spaced at least 12 hours apart between 24 and 48 hours after the hCG.

- **What is the success rate for IUI?**
 - The overall success rate of IUI is between 15-20 percent per cycle and the rate of multiple gestation pregnancies is 23-30 percent.

- **How long does washed sperm live?**
 - Washed sperm can live 24-72 hours; however, it does lose potency after 24 hours. Washed Sperm can live up to 5 days in fertile mucus, 2-3 days being pretty common.

- **Do I need to rest after an IUI?**
 - Most people don't need to, but if you had cramping or don't feel well afterward it is better to rest for a while and continue your routine activities.

- **What should I avoid after an IUI**
 - You should avoid lifting heavy weights and heavy workout. Continue your routine activities and avoid intercourse for at least 24 hours.

- **Can the sperm fall out?**
 - Once the sperm is injected into the uterus, it does not fall out. There can, however, be increased wetness after the procedure because of the catheter loosening mucus in the cervix and allowing it to flow out.

- **How high a sperm count is needed for IUI?**
 - A count above 10 million washed sperms appears necessary for success, Higher success rates are with washed counts over 20-30 million.

- **How many IUIs should I try before moving on to IVF?**
 - One might do 2-3 IUIs on oral ovulogens (Chlomephene citrate/ letrozle) before moving on to 2-3 cycles with injectables(rFSH/ hMG). If one doesn't have success after 3 good ovulatory cycles on injectables with well-timed IUI, it would be time to consider IVF.

- **How to Know if Pregnancy Has Occurred After IUI?**
 - Approximately 2 weeks after IUI, a pregnancy test would be advised by the doctor to confirm the pregnancy.

IN VITRO FERTILIZATION (IVF)

- **What is IVF or test tube baby?**

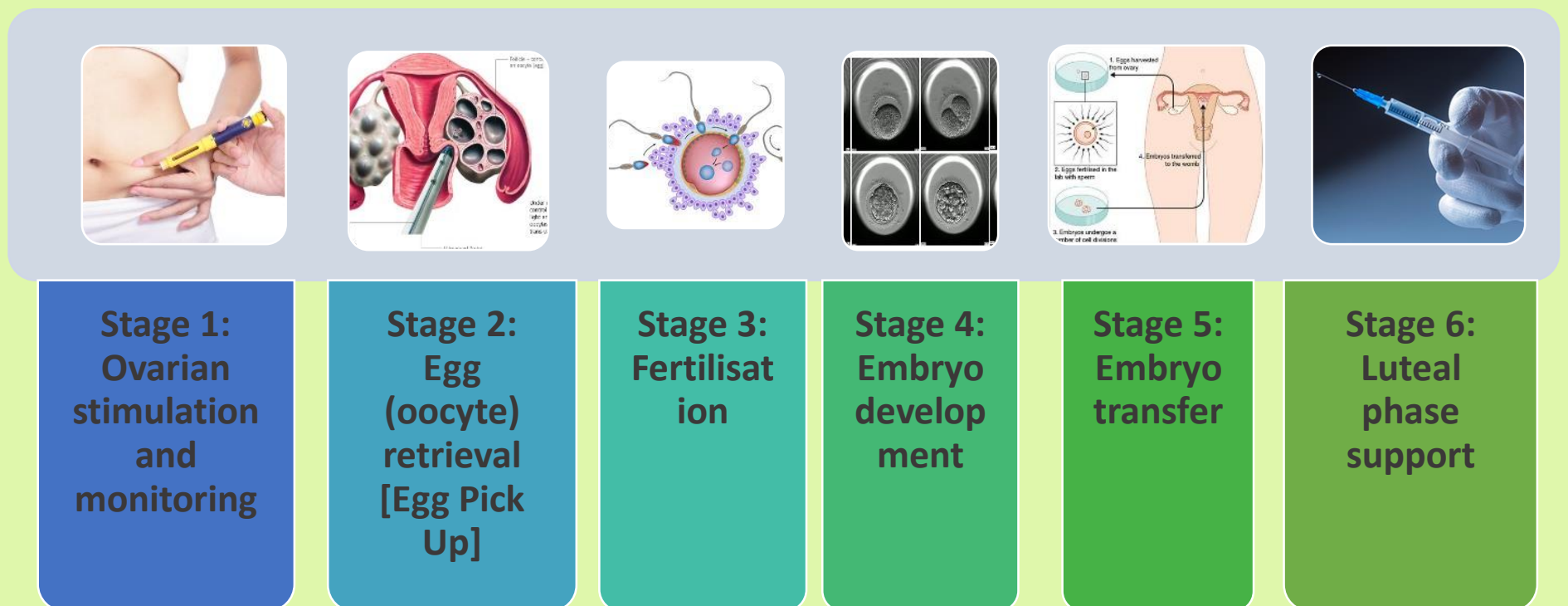
- In vitro fertilisation (IVF) literally means 'fertilisation in glass'. You may have also heard the term 'test tube babies' but these days the procedure involves placing an egg and sperm together in a plastic dish to fertilise, rather than in a test tube.
- IVF refers to a technique of assisted reproduction where the egg and sperm are fertilised outside of the body to form an embryo. This embryo is then transferred to the uterus to hopefully implant and become a pregnancy.
- The first IVF baby, Louise Brown, was born in 1978 in the United Kingdom.
- The technique was originally developed to treat infertility caused by blocked or damaged fallopian tubes but is now used to treat a wider variety of infertility problems.

- **When Is IVF Indicated?**

- IVF was originally developed for women with blocked fallopian tubes or missing tubes and is still used to treat those conditions. It is also used when infertility cannot be explained and with the following ovulatory or structural causes:
 - Problems with ovulation
 - Endometriosis
 - Fibroids
 - Polycystic ovarian syndrome
 - Cervical problems.
 - Advanced maternal/paternal age
 - Severe male factor
 - Previous failed treatment (IUI)

• What is IVF procedure?

- Starting IVF can be a very long and arduous time – it is another step closer to becoming parents. Naturally, you will feel hopeful about a successful outcome but you also need to prepare yourself for around two months of medications, numerous procedures and testing.
- Please also bear in mind that the success rate of modern fertility treatments is high, but for the majority of couples, multiple treatment cycles may be necessary.
- The basic stages involved in the IVF procedure are detailed below. The whole process up to the embryo transfer stage will usually take six to eight weeks.



• Stage 1

- Ovarian stimulation and monitoring
- Baseline hormone evaluation will be done on day 2 of your cycle along with a transvaginal sonogram to determine the total number of available eggs in that particular cycle.
- Depending on your reports injection of recombinant FSH (rFSH) or a mixture of FSH and LH (hMG) will be started
- You will be called on 6th day of starting the injection, for ultrasound (USG) to monitor the growth of follicles and depending on that dose of the injection may be reduced or increased.

- Injections will continue till 4 follicles reach 18 mm and a final injection called the trigger is given
- Egg collection is done between 34 to 36th hour of the trigger

- Stage II
- Egg retrieval/pickup
- This a procedure performed under anaesthesia. Just like routine TVS scan the probe is inserted along with a long needle.
- The ovaries are visualized with the follicles and the needle is inserted in the follicle and all the fluid inside the follicle is aspirated and the fluid is then immediately sent to the embryology lab
- In the embryology lab the embryologist examines this fluid under the microscope for presence of egg, once the egg is visualized it is kept in a separate dish .
- This procedure continues till all the follicles are aspirated and the eggs retrieved.

- Stage III
- **Fertilization**
- About two hours before egg pick up, a semen sample is collected from the male partner. Two to three days' abstinence from intercourse/masturbation is preferred prior to the sample collection day. The sperm sample is usually produced by masturbation at the clinic. The sperm is processed to select the strongest, most active sperm. This is called 'sperm washing'. The sperm are then placed with the eggs in an incubator set to the same temperature as a woman's body. The next day, the eggs are examined under a microscope to determine whether fertilisation has occurred The resulting embryos will be either transferred to the uterus two to five days later, or frozen for later transfer.

- **Stage IV**

- **Embryo Development**

- This is a process of monitoring the growth and development of the fertilized egg and is done by an embryologist who examines and logs the information on the growth, quality and number of embryos growing at a proper rate.
- The various stages of embryo development are
 - Zygote : A single sperm penetrates the mother's egg cell, and the resulting cell is called a zygote.
 - Morula : When the zygote reaches 16 or more cells, it is called a morula.
 - Blastocyst: The morula continues to divide, creating an inner group of cells with an outer shell. This stage is called a blastocyst and consists of approximately 100 cells

- **Stage V**

- **Embryo transfer**

- Embryo transfer is not a complicated procedure – rather like a pap smear – and can be performed without anaesthesia. Two to five days following egg pick up, the embryo is placed in a catheter (a soft tube) and transferred to the uterus via the vaginal opening. The number of embryos transferred depends on a woman's age, cause of infertility, pregnancy history and other factors. Generally one, or occasionally two, embryos will be transferred to the uterus. If more than 2 embryos are formed then the remaining embryos are frozen and can be used in case the first cycle fails.

- **Stage VI**

- **Luteal Phase Support**

- The luteal phase is the two week period between the embryo transfer and the pregnancy test. It is usually recommended that you take it easy for a couple of days after the transfer.

- After 48 hours, you can resume your normal activities – these will not affect implantation.
 - The corpus luteum (the follicle after the egg is released) does not produce the hormones oestradiol and progesterone to prepare the uterus for embryo implantation as it would in a natural cycle. This is due to the treatment prior to egg collection and the collection process itself. In order to ensure there is adequate progesterone present, you will be prescribed progesterone as a vaginal gel or in the form of injections or tablets to help keep the endometrium (the lining of the uterus) in optimal condition for implantation. After approximately 16 days, you will return to the clinic or your doctor for a blood test to determine whether a pregnancy has occurred
- **Are the injection used in IVF treatment very painful?**
 - The idea of daily injections can be overwhelming. The initial injection of rFSH are administered by a very small gauge needle and are subcutaneous. These injection are as painful as being stung by an ant.
 - Some patients might be given injections of progesterone which can be painful for which analgesic cream can be administered.
- **Is egg retrieval procedure painful?**
 - Because anaesthesia is used for egg retrieval, patients feel nothing during the procedure. Patients may feel some minor cramping in the ovaries that can be treated with appropriate medications.
- **How long does egg retrieval take?**
 - Egg retrieval typically takes 30- 45 minutes, depending on how many follicles are present.

- **Will the egg retrieval damage my ovaries?**
 - No, there is no damage to the ovary with egg retrieval procedure. Of course there are short term risks such as infection or bleeding which can occur, but thankfully these are extremely rare events. Studies have shown that ovaries seem to be unaffected by stimulation and egg retrieval.

- **Is bleeding expected after the egg retrieval?**
 - Light spotting and cramping are common after an egg retrieval. This bleeding is most likely the result of needle punctures in the vaginal wall. Bleeding and cramping should be minor and will most likely be less intense than your regular period.

- **What is done with any "leftover" embryos?**
 - Embryos that have developed to the blastocyst stage but are not transferred during the transfer cycle will be cryopreserved (frozen) if that is your wish.

- **How long do out of town patients have to stay for IVF treatment?**
 - Generally the patients need to stay in town for a period of 3 weeks if stimulation is to be started at the hospital where egg retrieval is done. If the stimulation is done at the home town under the guidance of the fertility specialist the patient has to come for egg retrieval procedure and stay for a week i.e till the day of embryo transfer. (day 3 to day 5 of egg retrieval procedure).

- **How soon can a patient from out of town travel back after embryo transfer?**
 - Most of the out of town patients return home the day after the embryo transfer All types of travel are safe. Sitting for an extended period of time will not affect chances of pregnancy. We recommend that patients traveling by air drink plenty of fluids, as circulated air can be quite dry, and dehydration should be avoided.

- **How successful is IVF?**

- The average IVF success rates using one's own eggs begins to drop around age thirty and dips rapidly in the mid 30s and early 40s, due to lower egg quantity and quality. The general global statistic shows that the pregnancy rate with IVF varies between 32 to 45 %
- In addition to age, success rates with IVF vary with respect to one's height, weight, infertility diagnosis, sperm count, and reproductive history, such as the previous number of pregnancies, miscarriages and births.

- **Are there any side effects associated with IVF?**

- Fertility medications can cause
 - Mood swings,
 - Headaches,
 - Hot flashes,
 - Abdominal pain,
 - Bloating.
- In very rare cases, fertility medication may induce ovarian hyper-stimulation syndrome (OHSS).

- **What are the symptoms of OHSS?**

- Nausea or vomiting
- Shortness of breath
- Decreased urinary frequency
- Feeling faint
- Significant weight gain within three to five days
- Severe stomach pain and bloating

- **How many times can a couple try IVF treatment?**

- There is no limit for it. However, many IVF attempts can reduce the possibility of pregnancy. In some cases, several attempts are performed until we get a pregnancy.

- **Does the number of embryos transferred influence the possibility of pregnancy?**

- There is hardly any difference in the chances of pregnancy if 1 or 2 blastocyst are transferred. If an embryo (day 3) more than 3 embryo are transferred chances of having multiple pregnancy increases.

- **Is there a higher risk of miscarriage in IVF treatment?**

- The risk of miscarriage is a little higher after IVF treatment. This risk is not linked to the treatment itself but to the patient's ability of becoming pregnant.

- **Is bleeding normal in the early stages of pregnancy?**

- No matter what type of pregnancy, bleeding is always abnormal. The patient should always consult physician. However, with IVF, bleeding is more common due to the risk factors and may not lead to miscarriage.

- **Should patients follow a diet before treatment?**

- There are not enough studies about this subject but some research have shown that a significant number of successful treatments were those of patients who followed a diet based on vegetables, fish organic oil etc., prior to their cycles.

- **Should patients lose weight before treatment?**

- Losing weight can increase the chances of pregnancy in patients with PCOS. Overweight ladies may have extended treatment periods and increased possibility of miscarriage.

POLYCYSTIC OVARIAN SYNDROME

- **What is PCOS?**

- Polycystic ovary syndrome (PCOS) is a hormonal disorder common among women of reproductive age. Women with PCOS may have infrequent or prolonged menstrual periods or excess male hormone (androgen) levels. The ovaries may develop numerous small follicles and fail to regularly release eggs.

- **What are the Symptoms of PCOS**

- Signs and symptoms of PCOS vary. A diagnosis of PCOS is made when you experience at least two of these signs:
- Polycystic ovaries. Your ovaries might be enlarged and contain follicles that surround the eggs. As a result, the ovaries might fail to function regularly.
- Difficulty in becoming pregnant (usually because of a lack of ovulation) (Infertility)
- Ultrasound appearance of ovarian cysts (polycystic ovaries)
- Periods that are absent (amenorrhoea) or infrequent (oligomenorrhoea)
- Excess of male hormones, causing symptoms such as hairiness (hirsutism) or acne
- Weight gain and an increase in fat, especially around the abdomen or tummy area
- Prediabetes or diabetes
- Abnormal levels of blood fats (lipids, such as cholesterol and triglycerides).

- **Why does it occur?**

- It is believed to be linked to both lifestyle factors and genetics – in other words it may run in the family and/or be affected by lifestyle factors such as body weight.
- Insulin resistance can be caused by genetic factors or lifestyle factors (such as being overweight) and is commonly a combination of both.

- **Can PCOS be treated?**

- There is no known cure for PCOS and it is thought that once you have it, you always will. But you can work together with your doctor to manage your symptoms and change your lifestyle so that you can have a healthy life.

- **How PCOS affects your body**

- Having higher-than-normal androgen levels can affect your fertility and other aspects of your health. Following are the effects of PCOS

- **Infertility**

- Metabolic syndrome
- Up to 80 percent of women with PCOS are overweight or obese. Both obesity and PCOS increase your risk for high blood sugar, high blood pressure, low HDL (“good”) cholesterol, and high LDL (“bad”) cholesterol.
- Together, these factors are called metabolic syndrome, and they increase the risk for heart disease, diabetes, and stroke.

- **Sleep apnea**

- This condition causes repeated pauses in breathing during the night, which interrupt sleep. Sleep apnea is more common in women who are overweight — especially if they also have PCOS.

➤ **Endometrial cancer**

- During ovulation, the uterine lining sheds. If you don't ovulate every month, the lining can build up. A thickened uterine lining can increase your risk for endometrial cancer.

➤ **Depression**

- Both hormonal changes and symptoms like unwanted hair growth can negatively affect your emotions. Many with PCOS end up experiencing depression and anxiety.

• **How is PCOS diagnosed?**

- Doctors diagnose PCOS if women have at least two of three main symptoms —
- High androgen levels
- Irregular periods
- Cysts in the ovaries.
- A pelvic exam, blood tests, and ultrasound can confirm the diagnosis.

• **How does PCOS cause Infertility?**

- In PCOS the egg may not be released in every cycle which leads to infertility.
- Further because of hormonal dysregulation the endometrium (lining of the uterus) may not be ready to accept the embryo and hence there can be failure of implantation

• **How can I get pregnant if I have PCOS?**

- PCOS can make it harder to get pregnant, and it can increase your risk for pregnancy complications and miscarriage. Weight loss and other treatments can improve your odds of having a healthy pregnancy.

- **How can I manage the symptoms of PCOS?**

- Management of symptoms of PCOS can be done with the help of medicines and lifestyle modification. Here are a few simple methods to manage PCOS by life style modification.

Symptoms	Treatment
Obesity, weight gain	Weight loss options include: <ul style="list-style-type: none"> • changes to diet • exercise
Hirsutism (hairiness)	Cosmetic treatments, i.e. Waxing, bleaching, laser, electrolysis <ul style="list-style-type: none"> • Weight loss
Acne	<ul style="list-style-type: none"> • Topical creams(consult your doctor)
Insulin resistance Diabetes	weight loss <ul style="list-style-type: none"> • Changes to diet • Exercise • Medications
Irregular and/or heavy periods	<ul style="list-style-type: none"> • Weight loss
Infertility	<ul style="list-style-type: none"> • weight loss • medications

- **What are my options for getting pregnant if I have PCOS?**

- There are multiple options of getting pregnant if you suffer from PCOS. Theses are :-
- Weight loss
- Life style and diet modification
- Medications (Hormonal preparations)
- Laparoscopic ovarian drilling
- IUI with medication (Ovulation Induction)
- IVF

ENDOMETRIOSIS

- **What is endometriosis?**

- Endometriosis occurs when the tissue that normally lines the inside of the uterus (the endometrium) grows in other places of your body where it doesn't belong, such as on the ovaries, fallopian tubes, outside surface of the uterus, bowel, bladder and rectum.

- **How common is Endometriosis?**

- Any female , from puberty to menopause, is susceptible to endometriosis. However you are more likely to develop the condition if you have the following risk factors:
 - Have not had children
 - Are overweight
 - Have heavy or prolonged periods
 - Had your first period at an early age, i.e. before 12 years of age
 - Have a family history of endometriosis, e.g. mother, sister, aunt.

- **What causes it ?**

- Hereditary: It is not known exactly what causes endometriosis, although it does tend to be hereditary, i.e. run in families.
- Retrograde Menstruation: This means that women menstruate 'backwards' through the fallopian tubes and into the pelvis, rather than through the vagina and out of the body.

- **What are the symptoms of Endometriosis?**

- Pain: The most common symptom of endometriosis is pelvic pain. The pain often correlates to the menstrual cycle.
- Bleeding: Heavy, prolonged, irregular inter cycle
- Bowel or bladder symptoms, bleeding or discomfort
- Irregular bowel activity, including diarrhea
- Bloating
- Tiredness
- Infertility
- Emotional problems (e.g. depression, anxiety)
- Premenstrual symptoms, including mood swings and irritability.

- **How does endometriosis affect pregnancy?**

- Up to 50% of women with infertility problems have endometriosis. Some women with mild endometriosis symptoms don't even know they have the condition until they have trouble becoming pregnant.
- In some cases, the fallopian tubes are damaged or have scar tissue due to the formation of endometriosis, and this can stop the flow of the egg down the tube. It also makes it more difficult for the sperm to travel along the tube to the egg, lowering the chance of conception..
- Other possible reasons for infertility include chocolate cysts (endometriosis of ovary) affecting ovulation, and eggs that don't develop properly and are less likely to be fertilised.
- It is also thought that the body produces toxins, which affect the sperm, and the developing embryo.

- **How does pregnancy affect endometriosis?**

- Pregnancy can relieve the symptoms of endometriosis – because you are no longer menstruating – but it is not a cure in itself. For many women, the symptoms usually return after giving birth or within a few years after childbirth. Most women can delay the return of the symptoms by breastfeeding, as long as the feeding is frequent enough and intense enough to suppress the menstrual cycle.

- **How is endometriosis diagnosed?**

- Endometriosis is a difficult entity to diagnose and it requires experience and proper technique to diagnose it on imaging. The diagnosis is done based on the following –

- History:

- History of painful menses. Heavy bleeding or irregular bleeding
- Painful sexual intercourse.
- Pain while defecating

- Examination : a Per vaginal examination may help in diagnosis . while performing the examination any pain or tenderness in the vagina or the pelvis is indicative of either endometriosis or pelvic inflammatory disease.

- Imaging : Good 2 d TVS can also help in diagnosing endometriosis especially chocolate cyst.

- MRI : 3d scan

- Laparoscopy : It is the gold standard of diagnosing endometriosis

- **What is a Chocolate cyst?**

- A chocolate cyst is an ovarian cyst filled with old blood. These cysts, which doctors call endometriomas, are not cancerous, though they usually mean that a person's endometriosis is severe enough to complicate their fertility.

- **How is endometriosis treated?**

- Treatment of endometriosis depends on the severity of the disease. It is generally managed with a combined modality of lifestyle modification, medicines and or surgery.

Grade of endometriosis	Involvement	Treatment
Grade I	Superficial ovary/ uterus and tube not involved	Life style modification and drugs
Grade II	Tubes and uterus may be involved	Drugs for pain relief and hormonal pills
Grade III	Uterus tubes ovaries involved	Drugs for pain relief and hormonal pills and Surgery for fertility enhancement
Grade IV	Uterus tubes ovary and surrounding organs involved	Fertility enhancing Surgery

COVID-19 AND INFERTILITY

- **I hear that elective medical procedures in my geographic area are stopped and IVF and other fertility treatments considered 'elective'?**
 - A: It was stopped initially during the pandemic for a couple of months but now all the treatments have been resumed.
 - No one providing your care believes that any fertility treatment is elective. Infertility is a disease, and treatment of infertility is medically necessary. There is a distinction between a treatment that cannot be postponed even for a few days (such as surgery for a ruptured appendix), and treatment that is time sensitive and extremely important (such as IVF) but not a medical emergency.
- **Am I at risk of contracting COVID-19 at my appointment?**
 - We are taking all possible precautions to protect our patients and staff, including:
 1. Having patients wait in their car in the parking lot until the treatment room is ready
 2. Pre-screening the patient by phone when they arrive at our clinic to determine potential risk
 3. Checking patient temperature at the door prior to entering. Patients with a temperature of 100 degrees or higher are not allowed into the clinic
 4. Staff are wearing masks
 5. Staff temperature is checked twice daily
 6. Frequent cleaning of high touch surfaces throughout the day

7. Good hand washing for all employees
8. Physical distancing in the clinic

- However, we all face the possibility of infection whenever we leave our homes, and we cannot guarantee that you face no risk of contracting the virus. This is because the virus is contagious long before any symptoms show.
- If you do not need to physically be in the office, we offer telehealth consultations by phone instead.

- **Is it safe to undergo ultrasound for ovulation study now?**

- As we said, we are taking utmost precautions to clean the machine after every use, spacing the appointments, changing the disposables after every patient. We have also reduced the number of ultrasound visits to reduce the risk of exposure.
- Can my clinic prevent me from getting infected by screening patients and staff?
 - As anyone who has been through fertility treatment or has prepared to begin fertility treatment knows, multiple clinic visits and procedures are required. Unfortunately, even if a clinic tries to screen patients and staff to lower the risk of novel coronavirus exposure in the fertility clinic, there is no way to guarantee prevention of exposure. COVID-19 is now spreading through communities and is not limited to those who have traveled to certain countries. People who have the novel coronavirus are contagious days before they develop any symptoms. The virus can be in the air that they breathe out and the air you breathe in. This risk is reduced by wearing masks and by increasing physical distance between people. However, even these precautions aren't foolproof and do not guarantee your safety.
 - We wish we could screen in a way that could eliminate risk, but we honestly cannot.

- **Can I proceed with fertility treatment if I meet diagnostic criteria for COVID-19?**
- If you meet diagnostic criteria for treatment you will have to be 14 days symptom free before being allowed to proceed with fertility treatment.
- **Will postponing my IVF treatment affect my ability to have child?**
- A: It is extremely difficult to consider postponing your treatment. Most people have gone through tremendous loss and grief by the time they get to the place where they are doing an IVF cycle. In addition, navigating the cost and insurance coverage aspects is daunting. Now that you are at this point in your family building, you are dealt a huge unknown with the COVID-19 pandemic, and how you should proceed, or start, this medical treatment. It should be somewhat helpful to hear that there is no evidence that delaying treatment for a month or two will ultimately affect your ability to have a child, even if you have concerns about advanced age and / or diminished ovarian reserve (low egg supply).
- **Is there a risk that my cycle could be cancelled if I proceed with treatment now?**
- A: As health care professional we are taking all the necessary precautions but during the course of the treatment if any of the doctors or staff members become positive we can continue your cycle at another fertility clinic after your covid testing so that your treatment cycle does not get cancelled.
- If you become covid positive during treatment cycle, we shall do the ovum pick but freeze your embryos/eggs and do a frozen thaw embryo transfer.

- **My IVF cycle was planned but my husband is tested COVID positive and I am under home quarantine. What can I do now?**
 - Consider scheduling a consultation and begin to prepare for your treatment cycle. Some people may want to use this time to focus on improving their general health through efforts such as smoking cessation or weight loss that may improve fertility treatment success. It's a good opportunity to focus on nutrition and reduce or eliminate habits that are detrimental to overall health.

- **I have been diagnosed with cancer and chemotherapy is recommended. Can I still attempt to freeze my eggs (or sperm if male)?**
 - Yes! People facing an urgent need for fertility preservation can proceed during the pandemic, if this is deemed to be reasonable after consultation with their doctor .

- **Are my eggs and embryos going to be safe during the COVID-19 pandemic?**
 - Yes. There is no immediate threat to the safety of cryopreserved eggs, sperm or embryos. Clinics have policies and procedures to maintain the liquid nitrogen tanks containing frozen embryos, eggs, and sperm. We will continue to do so during this time of crisis. That is always and will continue to be a top priority. We have reached out to our supplier of liquid nitrogen and they do not anticipate any disruption of deliveries. We have obtained extra reserves to be safe.
 - Please ask your doctor if you have any questions about the systems in place at your provider's clinic.

- **Are you checking to see if my egg donor or gestational carrier are at risk of being infected with COVID-19?**
 - Yes. We are following the recommendation and tracking updates as it relates to third party reproduction. We are asking all tissue donors if they have, in the last 28 days:

- traveled to areas with COVID-19 outbreaks, as defined by CDC
 - lived with individuals diagnosed with or suspected of having COVID-19 infection; or
 - been diagnosed with or suspected of having COVID-19 infection
- Furthermore, we are advising our third party agency partners to making sure they are also following the FDA's guidance.
- **I read on the internet that some scientists are suggesting the COVID-19 might disrupt sperm production. Is that true?**
 - At this time, there is no evidence to support this speculation. For all intents and purposes, this paper was intended to warn the medical and scientific community to investigate, and not intended to be a public health pronouncement. We are monitoring case reports when come from trusted sources like the CDC and WHO. In the meantime there is no evidence that sperm counts are compromised by those who are infected, and there is no recommendation to bank sperm. We will update this section as we learn more.